

=> file reg

FILE 'REGISTRY' ENTERED AT 15:23:51 ON 01 OCT 2003
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=> display history full l1-

FILE 'REGISTRY' ENTERED AT 14:06:18 ON 01 OCT 2003

E NITRIC OXIDE/CN
L1 1 SEA "NITRIC OXIDE"/CN
E NITROGEN DIOXIDE/CN
L2 1 SEA "NITROGEN DIOXIDE"/CN
E HYDROGEN PEROXIDE/CN
L3 1 SEA "HYDROGEN PEROXIDE"/CN

FILE 'HCA' ENTERED AT 14:10:36 ON 01 OCT 2003

L4 2893 SEA (OXIDIZ? OR OXIDIS? OR OXIDAT? OR OXIDN#) (3A) (L1 OR
NITRIC#(W)OXIDE# OR NO(A) (GAS## OR GASEOUS? OR GASIF? OR
STREAM? OR FLOW OR FLOWS OR FLOWED OR FLOWING#))
L5 135015 SEA L2 OR NITROGEN#(W)DIOXIDE# OR NO2
L6 166247 SEA L3 OR HYDROGEN#(A)PEROXIDE# OR H2O2
L7 36 SEA L4 AND L5 AND L6
L8 74835 SEA L1
L9 31 SEA L7 AND L8
L10 19890 SEA (CAT# OR CATALY?) (2A) (COAT? OR FILM? OR LAYER?)
L11 0 SEA L7 AND L10
L12 539 SEA L8 AND L5 AND L6
L13 2 SEA L12 AND L10

FILE 'REGISTRY' ENTERED AT 14:20:22 ON 01 OCT 2003

E IRON/CN
L14 1 SEA IRON/CN
E CHROMIUM/CN
L15 1 SEA CHROMIUM/CN
E COPPER/CN
L16 1 SEA COPPER/CN
E PLATINUM/CN
L17 1 SEA PLATINUM/CN
E SILVER/CN
L18 1 SEA SILVER/CN
E PALLADIUM/CN
L19 1 SEA PALLADIUM/CN

FILE 'LCA' ENTERED AT 14:22:34 ON 01 OCT 2003

L20 508 SEA (L14 OR L15 OR L16 OR L17 OR L18 OR L19 OR IRON# OR
FE OR CHROMIUM# OR CR OR COPPER# OR CU OR PLATINUM# OR
PT OR SILVER# OR AG OR PALLADIUM# OR PD) (2A) (FILM? OR
COAT? OR LAYER?)

FILE 'HCA' ENTERED AT 14:25:53 ON 01 OCT 2003
L21 198358 SEA (L14 OR L15 OR L16 OR L17 OR L18 OR L19 OR IRON# OR
FE OR CHROMIUM# OR CR OR COPPER# OR CU OR PLATINUM# OR
PT OR SILVER# OR AG OR PALLADIUM# OR PD) (2A) (FILM? OR
COAT? OR LAYER?)
L22 2 SEA L7 AND L21
L23 3 SEA L12 AND L21

FILE 'REGISTRY' ENTERED AT 14:26:30 ON 01 OCT 2003
E SILVER OXIDE/CN
L24 2 SEA "SILVER OXIDE"/CN
E IRON OXIDE/CN
L25 4 SEA "IRON OXIDE"/CN
E RUTHENIUM OXIDE/CN
L26 1 SEA "RUTHENIUM OXIDE"/CN
E COPPER FERRITE/CN
L27 2 SEA "COPPER FERRITE"/CN
E MAGNESIUM OXIDE/CN
L28 1 SEA "MAGNESIUM OXIDE"/CN

FILE 'HCA' ENTERED AT 14:29:45 ON 01 OCT 2003
L29 6063 SEA L24
L30 79928 SEA L25
L31 1684 SEA L26
L32 1053 SEA L27
L33 83781 SEA L28
L34 4 SEA L7 AND ((L29 OR L30 OR L31 OR L32 OR L33))

FILE 'LCA' ENTERED AT 14:31:13 ON 01 OCT 2003
L35 1074 SEA (SILVER# OR AG) (W) (OXIDE# OR MONOXIDE#) OR AG2O OR
AGO/IT OR (IRON# OR FE) (W) (OXIDE# OR DIOXIDE# OR
TRIOXIDE#) OR FEO OR FE2O3 OR (RUTHENIUM# OR RU) (W) (OXIDE
OR DIOXIDE# OR TETROXIDE# OR TETRAOXIDE#) OR RUO2 OR
RUO4 OR QUARTZ# OR (MOLYBDENUM# OR MO) (2A) GLASS?
L36 483 SEA SPINEL# OR (COPPER# OR CU) (A) FERRITE# OR (MAGNESIUM#
OR MG) (W) (OXIDE# OR MONOXIDE#) OR MGO

FILE 'HCA' ENTERED AT 14:42:29 ON 01 OCT 2003
L37 25285 SEA ((L29 OR L30 OR L31 OR L32 OR L33) OR L35 OR
L36) (2A) (COAT? OR FILM? OR LAYER?)
L38 1 SEA L7 AND L37
L39 5 SEA L7 AND (L35 OR L36)
L40 21 SEA L12 AND ((L29 OR L30 OR L31 OR L32 OR L33))
L41 3 SEA L12 AND L37
L42 25 SEA L12 AND (L35 OR L36)
L43 18 SEA L40 AND L42

FILE 'REGISTRY' ENTERED AT 14:56:16 ON 01 OCT 2003
E ALUMINA/CN
L44 1 SEA ALUMINA/CN

FILE 'HCA' ENTERED AT 14:57:22 ON 01 OCT 2003

L45 659749 SEA GLASS?
L46 450657 SEA L44 OR (ALUMINUM# OR AL) (W) (OXIDE# OR TRIOXIDE#) OR
ALUMINA# OR AL2O3
L47 0 SEA L7 AND L45
L48 5 SEA L7 AND L46
L49 8 SEA L12 AND L45
L50 21 SEA L12 AND L46
L51 16 SEA L40 AND L50
L52 14 SEA L42 AND L50
L53 21 SEA L13 OR L22 OR L23 OR L34 OR L38 OR L39 OR L41 OR L48
OR L49
L54 13 SEA (L43 OR L51 OR L52) NOT L53
L55 28 SEA (L7 OR L9) NOT (L53 OR L54)
L56 9 SEA (L40 OR L42 OR L50) NOT (L53 OR L54 OR L55)

FILE 'REGISTRY' ENTERED AT 15:23:51 ON 01 OCT 2003

=> file hca

FILE 'HCA' ENTERED AT 15:24:03 ON 01 OCT 2003

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=> d 153 1-21 cbib abs hitstr hitind

L53 ANSWER 1 OF 21 HCA COPYRIGHT 2003 ACS on STN

139:45133 Methods of forming roughened **layers** of
platinum for use in capacitors. Marsh, Eugene P. (Micron
Technology, Inc., USA). U.S. US 6583022 B1 20030624, 7 pp.
(English). CODEN: USXXAM. APPLICATION: US 1998-141840 19980827.

AB The invention relates to a method of forming roughened
layers of **platinum** for use in capacitors. The
method consists of the steps of (i) providing a substrate within a
reaction chamber; (ii) flowing an oxidizing gas into the reaction
chamber; (iii) flowing a platinum precursor into the reaction
chamber and depositing platinum from the platinum precursor over the
substrate in the presence of the oxidizing gas; and (iv) maintaining
a temp. within the reaction chamber of 0-300.degree. during the
depositing.

IT 7722-84-1, **Hydrogen peroxide**, processes
10102-43-9, Nitrogen monoxide, processes 10102-44-0
, Nitrogen oxide (NO2), processes
(**oxidizing** agent; methods of forming roughened
layers of **platinum** for use in capacitors)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

IC ICM H01L021-20
ICS H01L021-44
NCL 438398000; 438964000; 438686000
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 56
ST roughened **layer platinum** capacitor
IT Surface roughness
(Pt film with; methods of forming roughened
layers of platinum for use in capacitors)
IT Adhesion promoters
Capacitor electrodes
Capacitors
(methods of forming roughened **layers of**
platinum for use in capacitors)
IT Controlled atmospheres
(oxidizing; methods of forming roughened **layers of**
platinum for use in capacitors)
IT 7439-88-5, Iridium, uses 7440-04-2, Osmium, uses 7440-05-3,
Palladium, uses 7440-16-6, Rhodium, uses 7440-18-8,
Ruthenium, uses 7440-22-4, **Silver**, uses 11107-69-0
11107-71-4, **Platinum**, rhodium 12030-49-8, Iridium oxide
12036-02-1, Osmium oxide (OsO2) 12036-10-1, **Ruthenium**
oxide (RuO2) 12137-27-8, Rhodium oxide (RhO2)
12779-05-4 25583-20-4, Titanium nitride (TiN) 37186-87-1
37186-93-9 66174-72-9
(adhesion **layer**; methods of forming roughened
layers of platinum for use in capacitors)
IT 65353-51-7, Platinum Bis(hexafluoroacetylacetonate) 121309-87-3,
cis-Bis(isocyanomethane)dimethylplatinum
(methods of forming roughened **layers of**
platinum for use in capacitors)
IT 7446-11-9, Sulfur trioxide, processes 7722-84-1,
Hydrogen peroxide, processes 7782-44-7, Oxygen,
processes 10024-97-2, Nitrous oxide, processes 10028-15-6,
Ozone, processes 10102-43-9, Nitrogen monoxide, processes
10102-44-0, Nitrogen oxide (NO2), processes
12033-49-7, Nitrogen oxide (NO3)
(oxidizing agent; methods of forming roughened
layers of platinum for use in capacitors)
IT 7440-06-4P, **Platinum**, uses

(roughened film; methods of forming roughened layers of platinum for use in capacitors)

IT 1271-07-4, Cyclopentadienyl trimethylplatinum 15170-57-7, Platinum acetylacetonate 19529-53-4, Platinum tetrakis(trifluorophosphine) 25478-60-8, Dicarbonyldichloroplatinum 94442-22-5, Methylcyclopentadienyl trimethylplatinum (vapor deposition precursor; methods of forming roughened layers of platinum for use in capacitors)

L53 ANSWER 2 OF 21 HCA COPYRIGHT 2003 ACS on STN

138:329361 Deposition method and apparatus of a silicon contg. film at a low temp. while restricting charge-up of a substrate, and a semiconductor device including the film. Ohtake, Naoto (Japan). U.S. Pat. Appl. Publ. US 2003077883 A1 20030424, 12 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-230406 20020829. PRIORITY: JP 2001-272617 20010907; JP 2002-200451 20020709.

AB The deposition method is that reactive gas is made to pass through communication holes and guided toward downstream of the communication holes after the gas is exposed to surface wave of microwave, and it is reacted with Si compd. gas to deposit a Si-contg. film on a substrate arranged in the downstream.

IT 7722-84-1, Hydrogen peroxide, processes 10102-43-9, Nitric oxide, processes 10102-44-0, Nitrogen dioxide, processes (reactive gas; deposition method and app. of silicon contg. film at low temp. while restricting charge-up of substrate)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IC ICM C30B001-00

ICS H01L021-20; H01L021-36

NCL 438478000

CC 75-1 (Crystallography and Liquid Crystals)

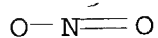
IT Glass substrates

Vapor deposition apparatus

Vapor deposition process (deposition method and app. of silicon contg. film at low temp.)

- while restricting charge-up of substrate)
- IT 7722-84-1, **Hydrogen peroxide**, processes
7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N2O),
processes 10102-43-9, Nitric oxide, processes
10102-44-0, **Nitrogen dioxide**, processes
12033-49-7, Nitrogen trioxide
(reactive gas; deposition method and app. of silicon contg. film
at low temp. while restricting charge-up of substrate)
- L53 ANSWER 3 OF 21 HCA COPYRIGHT 2003 ACS on STN
138:279720 Solvated ruthenium precursors for direct liquid injection of
ruthenium and ruthenium oxide and method of using same. Marsh,
Eugene P.; Uhlenbrock, Stefan (Micron Technology, Inc., USA). U.S.
US 6541067 B1 20030401, 7 pp., Cont.-in-part of U.S. Ser. No.
140,878. (English). CODEN: USXXAM. APPLICATION: US 2000-506962
20000218. PRIORITY: US 1998-140878 19980827; US 1998-140932
19980827.
- AB A method is provided for forming a film of Ru or Ru oxide to the
surface of a substrate by employing the techniques of CVD to decomp.
Ru precursor formulations. The Ru precursor formulations of the
present invention include a Ru precursor compd. and a solvent
capable of solubilizing the Ru precursor compd. A method is further
provided for making a vaporized Ru precursor for use in the CVD of
Ru and Ru-contg. materials onto substrates, wherein a Ru precursor
formulation having a Ru-contg. precursor compd. and a solvent
capable of solubilizing the Ru-contg. precursor compd. is vaporized.
- IT 11113-84-1, **Ruthenium oxide**
(films; method of forming Ru or Ru
oxide films on semiconductor substrate by CVD
using solvated ruthenium precursors)
- RN 11113-84-1 HCA
CN Ruthenium oxide (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
- IT 7722-84-1, **Hydrogen peroxide**, processes
10102-43-9, Nitrogen oxide (NO), processes
10102-44-0, **Nitrogen dioxide**, processes
(oxidizing agent; method of forming Ru or Ru
oxide films on semiconductor substrate by CVD
using solvated ruthenium precursors)
- RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)
- HO-OH
- RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)
- N=O
- RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)



- IC ICM C23C016-16
NCL 427252000; 427255310; 427901000; 438681000; 438686000; 438758000;
438778000
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
IT Vapor deposition process
(chem.; method of forming Ru or **Ru oxide**
films on semiconductor substrate by CVD using solvated
ruthenium precursors)
IT Peroxides, processes
(org., oxidizing agent; method of forming Ru or **Ru**
oxide films on semiconductor substrate by CVD
using solvated ruthenium precursors)
IT 11113-84-1, **Ruthenium oxide**
(**films**; method of forming Ru or **Ru**
oxide films on semiconductor substrate by CVD
using solvated ruthenium precursors)
IT 7440-18-8, Ruthenium, processes
(**films**; method of forming Ru or **Ru oxide**
films on semiconductor substrate by CVD using solvated
ruthenium precursors)
IT 7446-09-5, Sulfur dioxide, processes 7446-11-9, Sulfur trioxide,
processes 7722-84-1, **Hydrogen peroxide**
, processes 7732-18-5, Water, processes 7782-44-7, Oxygen,
processes 10024-97-2, Nitrogen oxide (N2O), processes
10028-15-6, Ozone, processes 10102-43-9, Nitrogen oxide
(NO), processes 10102-44-0, **Nitrogen**
dioxide, processes
(oxidizing agent; method of forming Ru or **Ru**
oxide films on semiconductor substrate by CVD
using solvated ruthenium precursors)
IT 12108-25-7
(precursor; method of forming Ru or **Ru oxide**
films on semiconductor substrate by CVD using solvated
ruthenium precursors)
IT 109-66-0, Pentane, uses 110-54-3, Hexane, uses 123-86-4, Butyl
acetate 142-82-5, Heptane, uses
(solvent; method of forming Ru or **Ru oxide**
films on semiconductor substrate by CVD using solvated
ruthenium precursors)

L53 ANSWER 4 OF 21 HCA COPYRIGHT 2003 ACS on STN
138:9831 Low dielectric constant material and method of processing by
CVD. O'Neill, Mark Leonard; Peterson, Brian Keith; Vincent, Jean
Louise; Vrtis, Raymond Nicholas (Air Products and Chemicals, Inc.,
USA). Eur. Pat. Appl. EP 1260606 A2 20021127, 20 pp. DESIGNATED
STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,

MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2002-10229 20020516. PRIORITY: US 2001-863150 20010523.

- AB Organofluorosilicate **glass** films contain both org. species and inorg. fluorines, exclusive of significant amts. of fluorocarbon species. Preferred films are $\text{Si}_v\text{O}_w\text{C}_x\text{H}_y\text{F}_z$, where $v+w+x+y+z = 100\%$, v is 10-35 at.%, w is 10-65 at.%, y is 10-50 at.%, x is 1-30 at.%, z is 0.1-15 at.%, and x/z is optionally >0.25 , wherein substantially none of the fluorine is bonded to the C. A CVD method includes: (a) providing a substrate within a vacuum chamber; (b) introducing into the vacuum chamber gaseous reagents including a fluorine-providing gas, an oxygen-providing gas and at least one precursor gas selected from an organosilane and an organosiloxane; and (c) applying energy to the gaseous reagents in the chamber to induce reaction of the gaseous reagents and to form the film on the substrate.
- IT 7722-84-1, **Hydrogen peroxide**, processes
10102-43-9, Nitrogen oxide (NO), processes
10102-44-0, **Nitrogen dioxide**, processes
(CVD method of producing organofluorosilicate **glass** films having low dielec. const.)
- RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

- RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

- IC ICM C23C016-30
ICS C23C016-40; C03C003-062; H01L021-316
- CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
- ST low dielec const organofluorosilicate **glass** film CVD
- IT Silanes
Siloxanes (nonpolymeric)
(CVD method of producing organofluorosilicate **glass** films having low dielec. const.)
- IT Fluoride **glasses**
Silicate **glasses**
(fluorosilicate, organo-, carbon-contg.; CVD method of producing organofluorosilicate **glass** films having low dielec. const.)

- IT Fluoride **glasses**
 Silicate **glasses**
 (fluorosilicate; low dielec. const. organofluorosilicate
glass films being capable of adhering to)
- IT Integrated circuits
 (low dielec. const. organofluorosilicate **glass** films as
 component layers in)
- IT Antireflective films
 Photoresists
 Porous materials
 (low dielec. const. organofluorosilicate **glass** films
 being capable of adhering to)
- IT Metals, miscellaneous
 Polymers, miscellaneous
 (low dielec. const. organofluorosilicate **glass** films
 being capable of adhering to)
- IT Silicate **glasses**
 (organo-; low dielec. const. organofluorosilicate **glass**
 films being capable of adhering to)
- IT 75-76-3, Tetramethylsilane 78-10-4, Tetraethoxysilane 78-62-6,
 Dimethyldiethoxysilane 353-66-2, Difluorodimethylsilane
 358-60-1, Fluorotriethoxysilane 373-74-0, Methyltrifluorosilane
 420-56-4, Fluorotrimethylsilane 542-91-6, Diethylsilane
 694-53-1, Phenylsilane 766-08-5, Methylphenylsilane 992-94-9,
 Methylsilane 993-07-7, Trimethylsilane 998-30-1, Triethoxysilane
 1111-74-6, Dimethylsilane 1112-39-6, Dimethyldimethoxysilane
 1529-17-5, Trimethylphenoxysilane 2031-62-1, Methyl-diethoxysilane
 2488-01-9, 1,4-Bis(dimethylsilyl)benzene 2551-62-4, Sulfur
 hexafluoride 2814-79-1, Ethylsilane 4364-07-2 5654-04-6
 5833-47-6, 1,1-Dimethyl-1-sila-2-oxacyclohexane 7381-30-8,
 1,2-Bis(trimethylsiloxy)ethane 7637-07-2, Boron fluoride (BF₃),
 processes 7664-39-3, Hydrogen fluoride, processes
7722-84-1, Hydrogen peroxide, processes
 7782-41-4, Fluorine, processes 7782-44-7, Oxygen, processes
 7783-54-2, Nitrogen fluoride (NF₃) 7783-60-0, Sulfur fluoride
 (SF₄) 7783-61-1, Silicon fluoride (SiF₄) 7787-71-5, Bromine
 fluoride (BrF₃) 7790-91-2, Chlorine fluoride (ClF₃) 10024-97-2,
 Nitrogen oxide (N₂O), processes 10028-15-6, Ozone, processes
10102-43-9, Nitrogen oxide (NO), processes
10102-44-0, Nitrogen dioxide, processes
 10544-72-6, Nitrogen oxide (N₂O₄) 13465-71-9 13537-33-2
 13637-87-1, Nitrogen chloride fluoride (NClF₂) 13824-36-7
 14857-34-2, Dimethylethoxysilane 14879-83-5 17082-61-0,
 1,2-Bis(trimethylsiloxy)cyclobutene 18139-76-9, Phenoxysilane
 18162-96-4, Cyclohexylsilane 18165-85-0, tert-Butylsilane
 25711-12-0 476608-55-6
 (CVD method of producing organofluorosilicate **glass**
 films having low dielec. const.)
- IT 409-21-2, Silicon carbide (SiC), miscellaneous 7440-21-3, Silicon,
 miscellaneous 7631-86-9, Silicon oxide (SiO₂), miscellaneous
 12033-89-5, Silicon nitride (Si₃N₄), miscellaneous
 (low dielec. const. organofluorosilicate **glass** films

being capable of adhering to)

L53 ANSWER 5 OF 21 HCA COPYRIGHT 2003 ACS on STN

136:320460 Microelectrodes in artificial synapses: a study of oxidative stress at the cellular level. Amatore, Christian; Arbault, Stephane; Bruce, Delphine; De Oliveira, Pedro; Erard, Marie; Vuillaume, Monique (Dept. de Chimie UMR CNRS 8640 "Pasteur", Ecole Normale Supérieure, Paris, 75231, Fr.). Portugaliae Electrochimica Acta, 19(3/4), 145-163 (English) 2001. CODEN: PEACEZ. ISSN: 0872-1904. Publisher: Portuguese Electrochemical Society.

AB Platinized carbon microelectrodes (.apprx.10 .mu.m diam.), positioned close (.apprx.5 .mu.m) to the cell membrane of a human fibroblast, the ensemble constituting a semi-artificial synapse, are used to monitor events at the cellular level. A few tens of femtomoles of reactive oxygen species produced and emitted by the cell upon mech. pricking with a **glass** micropipette (.apprx.1 .mu.m diam.) are released into the liq. film of some hundred femtoliters comprised between the cytoplasmic membrane and the electrode surface, leading to a sudden and drastic rise in their concns. (in the order of several micromoles). This oxidative stress-type response aims at disarming the aggressor and is thought to be shared by many (if not all) eukaryotic cells. This method allows to detect a real time and quantify the species constituting the oxidative burst cocktail: **hydrogen peroxide**, **H2O2**, peroxyxynitrite, ONO2, nitrogen monoxide, NO0, and nitrite, **NO2**. They are likely to derive ultimately from superoxide anion, O2O-, and nitrogen monoxide, NO0, synthesized by NADPH oxidase and NO synthase enzyme systems, resp. By placing the microelectrode at different positions about the injured area of the cell membrane, it was concluded that the signals correspond to a spherical diffusion of the emitted electroactive species from a point-source.

IT 7722-84-1, **Hydrogen peroxide**, biological studies 10102-43-9, Nitric oxide, biological studies (microelectrodes in artificial synapses in a study of oxidative stress at the cellular level)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

CC 4-1 (Toxicology)

Section cross-reference(s): 9, 13

IT 7722-84-1, **Hydrogen peroxide**, biological studies 7782-44-7D, Oxygen, reactive species 10102-43-9,

Nitric oxide, biological studies 11062-77-4, Superoxide
14797-65-0, Nitrite, biological studies 19059-14-4, Peroxynitrite
(microelectrodes in artificial synapses in a study of oxidative
stress at the cellular level)

L53 ANSWER 6 OF 21. HCA COPYRIGHT 2003 ACS on STN

135:234817 Deposition and annealing of multicomponent ZrSnTiOx and
HfSnTiOx oxide thin films using solventless liquid mixture of
precursors. Senzaki, Yoshihide; Hochberg, Arthur Kenneth; Roberts,
David Allen; Norman, John Anthony Thomas; Fleming, Robert Mclemore;
Alers, Glenn Baldwin (Air Products and Chemicals, Inc., USA; Lucent
Technologies Inc.). Eur. Pat. Appl. EP 1132494 A2 20010912, 9 pp.
DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI,
LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN:
EPXXDW. APPLICATION: EP 2001-105786 20010308. PRIORITY: US
2000-522634 20000310.

AB Complex mixed metal contg. thin films can be deposited by CVD from
liq. mixts. of metal complexes without solvent by direct liq.
injection and by other precursor dispersing method such as aerosol
delivery with subsequent annealing to improve elec. properties of
the deposited films. This process has potential for com. success in
microelectronics device fabrication of dielecs., ferroelecs.,
barrier metals/electrodes, superconductors, **catalysts**, and
protective **coatings**. Application of this process,
particularly the CVD of ZrSnTiOx (Zr Sn titanate, or ZTT) and
HfSnTiOx (Hf Sn titanate, or HTT) thin films was studied
successfully.

IT 10102-44-0, Nitrogen oxide (no2), processes
(deposition and annealing of ZrSnTiOx and HfSnTiOx oxide films
using solventless liq. mixt. of precursors and oxygen contg.
reactant of)

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O=N=O

IT 7722-84-1, Hydrogen peroxide, processes
10102-43-9, Nitrogen oxide (NO), processes
(deposition and annealing of multicomponent ZrSnTiOx and HfSnTiOx
oxide thin films using solventless liq. mixt. of precursors and
annealing gas of)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

IC ICM C23C016-18
ICS C23C016-40; C30B025-14

CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75

IT **10102-44-0**, Nitrogen oxide (**no2**), processes
(deposition and annealing of ZrSnTiOx and HfSnTiOx oxide films using solventless liq. mixt. of precursors and oxygen contg. reactant of)

IT 7440-37-1, Argon, processes 7440-59-7, Helium, processes
7722-84-1, **Hydrogen peroxide**, processes
7727-37-9, Nitrogen, processes 7732-18-5, Water, processes
7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N2O), processes 10028-15-6, Ozone, processes **10102-43-9**, Nitrogen oxide (NO), processes
(deposition and annealing of multicomponent ZrSnTiOx and HfSnTiOx oxide thin films using solventless liq. mixt. of precursors and annealing gas of)

L53 ANSWER 7 OF 21 HCA COPYRIGHT 2003 ACS on STN
133:128678 Organometallic deposition of dielectric layers using supercritical fluids such as CO2 in semiconductor device fabrication. Morita, Kiyoyuki; Ohtsuka, Takashi; Ueda, Michihito (Matsushita Electric Industrial Co., Ltd., Japan). Eur. Pat. Appl. EP 1024524 A2 20000802, 32 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-101398 20000125. PRIORITY: JP 1999-18597 19990127; JP 1999-104873 19990413.

AB A semiconductor substrate is placed within a housing. By supplying organometallic complexes and CO2 in a supercrit. state into the housing, a BST thin film is formed on a Pt thin film, while at the same time, C compds., which are produced when the BST thin film is formed, are removed. The soly. of C compds. in the supercrit. CO2 is very high, and yet the viscosity of the supercrit. CO2 is low. Accordingly, the C compds. are removable efficiently from the BST thin film. An oxide or nitride film may also be formed by performing oxidn. or nitriding at a low temp. using H2O in a supercrit. or subcrit. state, for example.

IT **7722-84-1**, **Hydrogen peroxide**, uses
10102-43-9, **Nitric oxide**, uses
10102-44-0, **Nitrogen dioxide**, uses
(oxidizing agent; organometallic deposition of dielec. layers using supercrit. fluids such as carbon dioxide in semiconductor device fabrication)

RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IC ICM H01L021-316
CC 76-3 (Electric Phenomena)
IT 7722-84-1, Hydrogen peroxide, uses
10028-15-6, Ozone, uses 10102-43-9, Nitric
oxide, uses 10102-44-0, Nitrogen
dioxide, uses
(oxidizing agent; organometallic deposition of dielec.
layers using supercrit. fluids such as carbon dioxide in
semiconductor device fabrication)

L53 ANSWER 8 OF 21 HCA COPYRIGHT 2003 ACS on STN
133:25620 Low temperature CVD processes for preparing ferroelectric
films using bi-alkoxides. Hintermaier, Frank S.; Van, Buskirk Peter
C.; Roeder, Jeffrey F.; Hendrix, Bryan C.; Baum, Thomas H.;
Desrochers, Debra A. (Infineon Technologies A.-G., Germany; Advanced
Technology Materials, Inc.). PCT Int. Appl. WO 2000034549 A2
20000615, 39 pp. DESIGNATED STATES: W: CN, JP, KR; RW: AT, BE, CH,
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE.
(English). CODEN: PIXXD2. APPLICATION: WO 1999-US28832 19991206.
PRIORITY: US 1998-208541 19981209.

AB CVD was used to form a film of Bi oxide, Sr oxide, and Ta oxide on a
heated substrate by decomp. the precursors of these oxides at the
surface of the substrate. The precursor of Bi oxide is a Bi complex
which includes at least one alkoxide group and is decomp. and
deposited at a temp. <450.degree.. The film of Bi, Sr, and Ta
oxides obtained by low-temp. CVD is predominantly nonferroelec., but
can be converted into a ferroelec. film by a subsequent heating
process.

IT 7722-84-1, Hydrogen peroxide, uses
10102-43-9, Nitric oxide, uses
10102-44-0, Nitrogen dioxide, uses
(oxidizer; low temp. CVD processes for prepg.
ferroelec. films using bismuth alkoxides)

RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IT 1309-48-4, Magnesia, uses 1344-28-1,
Alumina, uses
(substrate; low temp. CVD processes for prepg. ferroelec. films
using bismuth alkoxides)
RN 1309-48-4 HCA
CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)

Mg=O

RN 1344-28-1 HCA
CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C23C016-00
CC 76-8 (Electric Phenomena)
Section cross-reference(s): 75
IT 7439-88-5, Iridium, uses 7440-05-3, Palladium, uses 7440-16-6,
Rhodium, uses 7440-57-5, Gold, uses 12035-99-3, Tungsten oxide
(WO) 12036-02-1, Osmium oxide (OsO2) 12036-09-8, Rhenium oxide
(ReO2) 12036-10-1, **Ruthenium oxide** (
RuO2) 12036-22-5, Tungsten oxide (WO2) 12137-15-4,
Osmium oxide (OsO) 12137-18-7, Rhodium oxide (RhO) 12137-27-8,
Rhodium oxide (RhO2) 12143-03-2, Rhenium oxide (ReO) 12143-05-4,
Ruthenium oxide (RuO) 116224-72-7, Bismuth
calcium copper strontium oxide (Bi2Ca2Cu3Sr2O10) 117656-29-8,
Barium copper ytterbium oxide (Ba2Cu3YbO6-7) 138290-45-6, Titanium
nitride (TiN0-1) 271779-40-9, Zirconium nitride (ZrN0-1)
271779-41-0, Tungsten nitride (WN0-1.7) 271779-42-1, Tantalum
nitride (TaN0-1.7)
(contact; low temp. CVD processes for prepg. ferroelec. films
using bismuth alkoxides)
IT 1304-76-3P, Bismuth oxide, processes 1314-11-0P, Strontium oxide,
processes 1314-61-0P, Tantalum pentoxide 12010-42-3P, Bismuth
iron oxide (BiFeO3) 12010-48-9P, Bismuth niobium
potassium oxide (BiNb5K2O15) 12048-25-8P, Bismuth potassium
titanium oxide (BiKTi2O6) 12161-72-7P, Barium bismuth vanadium
oxide (Ba2BiVO6) 12231-09-3P, Barium bismuth niobium oxide

(Ba₂BiNbO₆) 12231-10-6P, Barium bismuth tantalum oxide (Ba₂BiTaO₆)
 12231-66-2P, Barium bismuth molybdenum oxide (Ba₃Bi₂MoO₉)
 12231-67-3P, Barium bismuth tungsten oxide (Ba₃Bi₂WO₉)
 12232-95-0P, Bismuth manganese oxide (BiMnO₃) 12233-01-1P, Bismuth
 lead niobium oxide (BiPb₂NbO₆) 12233-04-4P, Bismuth lead tantalum
 oxide (BiPb₂TaO₆) 12233-27-1P, Bismuth lead molybdenum oxide
 (Bi₂Pb₃MoO₉) 13595-86-3P, Bismuth tungsten oxide (Bi₂WO₆)
 51403-91-9P, Bismuth niobium strontium oxide (Bi₂Nb₂SrO₉)
 61163-38-0P, Bismuth lead tungsten oxide (Bi₂Pb₃WO₉) 156832-05-2P,
 Bismuth niobium strontium tantalum oxide (Bi₂NbO-2SrTaO-2O₉)
 167773-21-9P, Bismuth lead vanadium oxide (BiPb₂VO₆) 187239-99-2P
 219534-62-0P 219534-64-2P 219534-66-4P 219534-79-9P, Bismuth
 lead molybdenum oxide (BiPb₆MoO₁₈) 219534-80-2P, Bismuth lead
 tungsten oxide (BiPb₆WO₁₈)

(low temp. CVD processes for prepg. ferroelec. films using
 bismuth alkoxides)

IT 7722-84-1, **Hydrogen peroxide**, uses

10024-97-2, Nitrogen oxide (N₂O), uses 10028-15-6, Ozone, uses

10102-43-9, **Nitric oxide**, uses

10102-44-0, **Nitrogen dioxide**, uses

12033-49-7, Nitrogen trioxide

(oxidizer; low temp. CVD processes for prepg.
 ferroelec. films using bismuth alkoxides)

IT 1303-00-0, Gallium arsenide, uses 1309-48-4, Magnesia,
 uses 1314-23-4, Zirconia, uses 1344-28-1,

Alumina, uses 7440-21-3, Silicon, uses 7440-32-6,

Titanium, uses 7631-86-9, Silica, uses 12033-89-5, Silicon

nitride, uses 12047-27-7, Barium titanate, uses 12060-00-3, Lead
 titanate 12060-59-2, Strontium titanate

(substrate; low temp. CVD processes for prepg. ferroelec. films
 using bismuth alkoxides)

L53 ANSWER 9 OF 21 HCA COPYRIGHT 2003 ACS on STN

132:215653 Fabrication of semiconductor structures and preparation of
ruthenium oxide films. Vaartstra, Brian

A.; Marsh, Eugene P. (Micron Technology, Inc., USA). PCT Int. Appl.
 WO 2000012779 A1 20000309, 21 pp. DESIGNATED STATES: W: AE, AL,

AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE,
 ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ,
 PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ,
 VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF,
 BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT,
 LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN:
 PIXXD2. APPLICATION: WO 1999-US18193 19990811. PRIORITY: US
 1998-140932 19980827.

AB The invention provides methods for the prepn. of Ru
oxide films from liq. Ru complexes of the formula

(diene)Ru(CO)₃, where diene refers to linear, branched, or cyclic
 dienes, bicyclic dienes, tricyclic dienes, their fluorinated
 derivs., their combinations, or derivs. addnl. contg. heteroatoms
 such as halide, Si, S, Se, P, As, N, or O, and an oxidizing gas.

Preferred examples are cyclohexadiene- or cycloheptadieneruthenium tricarbonyl with O gas.

IT 7722-84-1, **Hydrogen peroxide**, processes
 10102-43-9, Nitric oxide, processes 10102-44-0,
Nitrogen dioxide, processes
 (CVD of **ruthenium oxide** films from
 ruthenium diene tricarbonyl complexes and)
 RN 7722-84-1 HCA
 CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
 CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA
 CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

IC ICM C23C016-40
 ICS C01G055-00
 CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 75
 ST **ruthenium oxide** film prepn;
 semiconductor structure fabrication; cyclohexadieneruthenium
 tricarbonyl **ruthenium oxide** film CVD;
 cycloheptadieneruthenium tricarbonyl **ruthenium**
oxide film CVD; CVD **ruthenium**
oxide film
 IT Vapor deposition process
 (chem.; CVD of **ruthenium oxide** films
 for semiconductor structures)
 IT Semiconductor device fabrication
 (prepn. of **ruthenium oxide** films
 for semiconductor structures)
 IT 12108-25-7 51403-93-1
 (CVD of **ruthenium oxide** films from)
 IT 7722-84-1, **Hydrogen peroxide**, processes
 7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N2O),
 processes 10028-15-6, Ozone, processes 10102-43-9,
 Nitric oxide, processes 10102-44-0, Nitrogen
dioxide, processes
 (CVD of **ruthenium oxide** films from
 ruthenium diene tricarbonyl complexes and)
 IT 11113-84-1P, Ruthenium oxide
 (prepn. of **ruthenium oxide** films

- for semiconductor structures)
- IT 7732-18-5, Water, processes
(vapor; CVD of **ruthenium oxide films**
from ruthenium diene tricarbonyl complexes and)
- L53 ANSWER 10 OF 21 HCA COPYRIGHT 2003 ACS on STN
131:38437 Low-temperature CVD of bismuth strontium tantalum oxide films
using bismuth amides. Hintermaier, Frank; Van Buskirk, Peter;
Roeder, Jeffrey R.; Hendrix, Bryan; Baum, Thomas H.; Desrochers,
Debra A. (Siemens Aktiengesellschaft, Germany; Advanced Technology
Materials, Inc.). PCT Int. Appl. WO 9929926 A1 19990617, 41 pp.
DESIGNATED STATES: W: JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI,
FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2.
APPLICATION: WO 1998-US26257 19981210. PRIORITY: US 1997-69041
19971210.
- AB CVD is used to form a film of Bi oxide, Sr oxide, and Ta oxide on a
heated substrate by decomp. the precursors of these oxides at the
surface of the substrate. The precursor of Bi oxide is a Bi complex
which includes .gtoreq.1 amide group and is decompd. and deposited
at <450.degree.. The film of Bi, Sr, and Ta oxides obtained by
low-temp. CVD is predominantly nonferroelec., but can be converted
into a ferroelec. film by subsequent heating.
- IT 11113-84-1, **Ruthenium oxide**
(low-temp. CVD of bismuth strontium tantalum oxide ferroelec.
films on substrates contg.)
- RN 11113-84-1 HCA
CN Ruthenium oxide (9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
- IT 7722-84-1, **Hydrogen peroxide**, processes
10102-43-9, **Nitric oxide**, processes
10102-44-0, **Nitrogen dioxide**, processes
(oxidizing agent; in low-temp. CVD of bismuth strontium
tantalum oxide films using bismuth amides)
- RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)
- HO-OH
- RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)
- N=O
- RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)
- O-N=O
- IT 1309-48-4, **Magnesium oxide** (MgO)

), processes **1344-28-1, Aluminum oxide (Al₂O₃)**, processes
(substrate; low-temp. CVD of bismuth strontium tantalum oxide films on)

RN 1309-48-4 HCA
CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)

Mg=O

RN 1344-28-1 HCA
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C23C016-40
ICS H01L029-00; C23C018-12; C30B025-02
CC 76-8 (Electric Phenomena)
Section cross-reference(s): 75
IT 1314-35-8, Tungsten oxide (WO₃), processes 7439-88-5, Iridium, processes 7440-05-3, Palladium, processes 7440-06-4, Platinum, processes 7440-16-6, Rhodium, processes 7440-57-5, Gold, processes **11113-84-1, Ruthenium oxide** 12624-27-0, Rhenium oxide 12645-46-4, Iridium oxide 12680-36-3, Rhodium oxide 61970-39-6, Osmium oxide 110621-08-4, Barium copper yttrium oxide (Ba₂Cu₃YO₆-7) 116224-72-7, Bismuth calcium copper strontium oxide (Bi₂Ca₂Cu₃Sr₂O₁₀) 119173-61-4, Zirconium nitride 138290-45-6, Titanium nitride (TiN₀-1) 226225-66-7, Tantalum tungsten nitride (TaWN₀-2.7)
(low-temp. CVD of bismuth strontium tantalum oxide ferroelec. films on substrates contg.)
IT **7722-84-1, Hydrogen peroxide**, processes 7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N₂O), processes 10028-15-6, Ozone, processes **10102-43-9, Nitric oxide**, processes **10102-44-0, Nitrogen dioxide**, processes 12033-49-7, Nitrogen oxide (NO₃)
(oxidizing agent; in low-temp. CVD of bismuth strontium tantalum oxide films using bismuth amides)
IT 1303-00-0, Gallium arsenide, processes **1309-48-4, Magnesium oxide (MgO)**, processes 1314-23-4, Zirconium oxide (ZrO₂), processes **1344-28-1, Aluminum oxide (Al₂O₃)**, processes 7440-21-3, Silicon, processes 7631-86-9, Silica, processes 12033-89-5, Silicon nitride (Si₃N₄), processes 12047-27-7, Barium titanate (BaTiO₃), processes 12060-00-3, Lead titanium oxide (PbTiO₃) 12060-59-2, Strontium titanate (SrTiO₃)
(substrate; low-temp. CVD of bismuth strontium tantalum oxide films on)

L53 ANSWER 11 OF 21 HCA COPYRIGHT 2003 ACS on STN
131:26686 Low-temperature CVD of bismuth strontium tantalum oxide films using bismuth carboxylates. Hintermaier, Frank; Van Buskirk, Peter; Roeder, Jeffrey R.; Hendrix, Bryan; Baum, Thomas H.; Desrochers,

Debra A. (Siemens Aktiengesellschaft, Germany; Advanced Technology Materials, Inc.). PCT Int. Appl. WO 9929925 A1 19990617, 38 pp.
 DESIGNATED STATES: W: JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2.
 APPLICATION: WO 1998-US26256 19981210. PRIORITY: US 1997-69058 19971210.

AB CVD is used to form a film of Bi oxide, Sr oxide, and Ta oxide on a heated substrate by decomp. the precursors of these oxides at the surface of the substrate. The precursor of Bi oxide is a Bi complex which includes .gtoreq.1 carboxylate group and is decompd. and deposited at <450.degree.. The film of Bi, Sr, and Ta oxides obtained by low-temp. CVD is predominantly nonferroelec., but can be converted into a ferroelec. film by subsequent heating.

IT 11113-84-1, Ruthenium oxide

(low-temp. CVD of bismuth strontium tantalum oxide ferroelec. films on substrates contg.)

RN 11113-84-1 HCA

CN Ruthenium oxide (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7722-84-1, Hydrogen peroxide, processes

10102-43-9, Nitric oxide, processes

10102-44-0, Nitrogen dioxide, processes

(oxidizing agent; in low-temp. CVD of bismuth strontium tantalum oxide films using bismuth carboxylates)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IT 1309-48-4, Magnesium oxide (MgO

), processes 1344-28-1, Aluminum oxide

(Al2O3), processes

(substrate; low-temp. CVD of bismuth strontium tantalum oxide films on)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)

Mg=O

RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 IC ICM C23C016-40
 ICS H01L029-00; C23C018-12; C30B025-02
 CC 76-8 (Electric Phenomena)
 Section cross-reference(s): 75
 IT 1314-35-8, Tungsten oxide (WO₃), processes 7439-88-5, Iridium,
 processes 7440-05-3, Palladium, processes 7440-06-4, Platinum,
 processes 7440-16-6, Rhodium, processes 7440-57-5, Gold,
 processes **11113-84-1, Ruthenium oxide**
 12624-27-0, Rhenium oxide 12645-46-4, Iridium oxide 12680-36-3,
 Rhodium oxide 61970-39-6, Osmium oxide 110621-08-4, Barium
 copper yttrium oxide (Ba₂Cu₃YO₆-7) 116224-72-7, Bismuth calcium
 copper strontium oxide (Bi₂Ca₂Cu₃Sr₂O₁₀) 119173-61-4, Zirconium
 nitride 138290-45-6, Titanium nitride (TiN₀-1) 226225-66-7,
 Tantalum tungsten nitride (TaWN₀-2.7)
 (low-temp. CVD of bismuth strontium tantalum oxide ferroelec.
 films on substrates contg.)
 IT **7722-84-1, Hydrogen peroxide**, processes
 7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N₂O),
 processes 10028-15-6, Ozone, processes **10102-43-9,**
Nitric oxide, processes **10102-44-0,**
Nitrogen dioxide, processes 12033-49-7, Nitrogen
 oxide (NO₃)
 (oxidizing agent; in low-temp. CVD of bismuth strontium
 tantalum oxide films using bismuth carboxylates)
 IT 1303-00-0, Gallium arsenide, processes **1309-48-4,**
Magnesium oxide (MgO), processes
 1314-23-4, Zirconium oxide (ZrO₂), processes **1344-28-1,**
Aluminum oxide (Al₂O₃), processes
 7440-21-3, Silicon, processes 7631-86-9, Silica, processes
 12033-89-5, Silicon nitride (Si₃N₄), processes 12047-27-7, Barium
 titanate (BaTiO₃), processes 12060-00-3, Lead titanium oxide
 (PbTiO₃) 12060-59-2, Strontium titanate (SrTiO₃)
 (substrate; low-temp. CVD of bismuth strontium tantalum oxide
 films on)
 L53 ANSWER 12 OF 21 HCA COPYRIGHT 2003 ACS on STN
 124:184167 Control of nitrogen oxide emissions by **hydrogen**
peroxide-enhanced gas-phase oxidation of
nitric oxide. Kasper, John M.; Clausen, Christian
 A. III; Cooper, C. David (University of Central Florida, Orlando,
 FL, USA). Journal of the Air & Waste Management Association, 46(2),
 127-33 (English) 1996. CODEN: JAWAFC. Publisher: Air & Waste
 Management Association.
 AB NO_x and SO_x are criteria air pollutants, emitted in large quantities
 from fossil-fueled elec. power plants. Emissions of SO_x are
 currently being reduced significantly in many places by wet
 scrubbing of the exhaust or flue gases, but most of the NO_x in the
 flue gases is NO, which is so insol. that it is virtually impossible

to scrub. Consequently, NOx control is mostly achieved using combustion modifications to limit the formation of NOx, or by using chem. redn. techniques to reduce NOx to N. Low NOx burners are relatively inexpensive but can only achieve .apprx.50% redn. in NOx emissions; selective catalytic redn. (SCR) can achieve high redns. but is very expensive. The removal of NOx in wet scrubbers could be greatly enhanced by gas-phase oxidn. of the NO to NO2, HNO2, and HNO3 (the acid gases are much more sol. in water than NO). This oxidn. is accomplished by injecting liq. H2O2 into the flue gas; the H2O2 vaporizes and dissocs. into hydroxyl radicals. The active OH radicals then oxidize the NO and NO2. This NOx control technique might prove economically feasible at power plants with existing SO2 scrubbers. The higher chem. costs for H2O2 would be balanced by the investment cost savings, compared with an alternative such as SCR. The oxidn. of NOx by H2O2 was demonstrated in a lab. quartz tube reactor. NO conversions of 97 and 75% were achieved at H2O2/NO mole ratios of 2.6 and 1.6, resp. The reactor conditions (500.degree., a pressure of one atm., and 0.7 s residence time) are representative of flue gas conditions for a variety of combustion sources. The oxidized NOx species were removed by caustic water scrubbing.

IT 7722-84-1, **Hydrogen peroxide**, uses
(control of nitrogen oxide emissions by **hydrogen peroxide-enhanced gas-phase oxidn. of nitric oxide**)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 51

ST nitrogen oxide oxidn **hydrogen peroxide**

IT Flue gases
(control of nitrogen oxide emissions by **hydrogen peroxide-enhanced gas-phase oxidn. of nitric oxide**)

IT Scrubbers
(wet, control of nitrogen oxide emissions by **hydrogen peroxide-enhanced gas-phase oxidn. of nitric oxide**)

IT 7722-84-1, **Hydrogen peroxide**, uses
(control of nitrogen oxide emissions by **hydrogen peroxide-enhanced gas-phase oxidn. of nitric oxide**)

IT 10102-43-9, Nitric oxide, processes 11104-93-1, Nitrogen oxide, processes
(control of nitrogen oxide emissions by **hydrogen peroxide-enhanced gas-phase oxidn. of nitric oxide**)

L53 ANSWER 13 OF 21 HCA COPYRIGHT 2003 ACS on STN

119:145653 Catalytic oxidation for removal of nitrogen oxides from waste gases using **hydrogen peroxide**. von Wedel, Wedigo; Barends, Ernst Robert; Eickhoff, Hubertus (Degussa A.-G., Germany). Ger. DE 4136183 C1 19930408, 11 pp. (German). CODEN: GWXXAW. APPLICATION: DE 1991-4136183 19911102.

AB Waste gases, e.g., flue gases and incinerator waste gases, are treated at <180.degree., preferably 20-100.degree., with **H2O2** using a finely divided, granular, prilled, or honeycomb catalyst of silica gel, zeolites, porous ion exchangers, phyllosilicates, diatomaceous earth, alumina, titania, layered silicates, or activated carbon catalyst. The product gases are used to produce HNO3 or a NO3- soln., which can be used to scrub the gases, enriching the gases to a recoverable product. Alkali or alk. earth metal hydroxide soln. can be used in the scrubbing soln. to control product recovery.

IT 10102-43-9, Nitrogen oxide (NO), miscellaneous
10102-44-0, Nitrogen oxide (NO2), miscellaneous
(pollutant, in catalytic oxidn. for removal of nitrogen oxides from waste gases using **hydrogen peroxide**)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

IT 7722-84-1, **Hydrogen peroxide**, miscellaneous
(reactant, in catalytic oxidn. for removal of nitrogen oxides from waste gases using **hydrogen peroxide**)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

$\text{HO}-\text{OH}$

IC ICM B01D053-36

ICS C01B021-38; G05D021-02

ICA B01J021-08; B01J029-04; B01J031-08; B01J021-04; B01J021-06;
B01J021-16; B01J021-18

CC 59-4 (Air Pollution and Industrial Hygiene)

IT Ion exchangers

(catalyst, in catalytic oxidn. for removal of nitrogen oxides from waste gases using **hydrogen peroxide**)

IT Kieselguhr

- Silica gel, uses
Zeolites, uses
 (catalyst, in catalytic oxidn. for removal of nitrogen oxides
 from waste gases using **hydrogen peroxide**)
- IT Recycling
 (catalytic oxidn. for removal of nitrogen oxides from waste gases
 using **hydrogen peroxide** for)
- IT Flue gases
Waste gases
 (catalytic oxidn. for removal of nitrogen oxides from, using
 hydrogen peroxide)
- IT Oxidation catalysts
 (for removal of nitrogen oxides from waste gases using
 hydrogen peroxide)
- IT Alkali metal hydroxides
Alkali metals, uses
Alkaline earth hydroxides
Alkaline earth metals
 (in catalytic oxidn. for removal of nitrogen oxides from waste
 gases using **hydrogen peroxide**)
- IT Nitrates, preparation
 (product, in catalytic oxidn. for removal of nitrogen oxides from
 waste gases using **hydrogen peroxide**)
- IT Silicates, uses
 (**layered, catalyst, in catalytic**
 oxidn. for removal of nitrogen oxides from waste gases using
 hydrogen peroxide)
- IT Silicates, uses
 (phyll-, catalyst, in catalytic oxidn. for removal of nitrogen
 oxides from waste gases using **hydrogen peroxide**
)
- IT Minerals
 (phyllsilicate, catalyst, in catalytic oxidn. for removal of
 nitrogen oxides from waste gases using **hydrogen**
 peroxide)
- IT 7440-44-0, Carbon, miscellaneous
 (activated, in catalytic oxidn. for removal of nitrogen oxides
 from waste gases using **hydrogen peroxide**)
- IT 1344-28-1, Alumina, uses 12173-98-7, Mordenite 13463-67-7,
Titania, uses
 (catalyst, in catalytic oxidn. for removal of nitrogen oxides
 from waste gases using **hydrogen peroxide**)
- IT 10102-43-9, Nitrogen oxide (NO), miscellaneous
10102-44-0, Nitrogen oxide (NO2), miscellaneous
11104-93-1, Nitrogen oxide, miscellaneous
 (pollutant, in catalytic oxidn. for removal of nitrogen oxides
 from waste gases using **hydrogen peroxide**)
- IT 7697-37-2, Nitric acid, miscellaneous 14797-55-8, Nitrate,
miscellaneous
 (product, in catalytic oxidn. for removal of nitrogen oxides from
 waste gases using **hydrogen peroxide**)
- IT 7722-84-1, Hydrogen peroxide,

miscellaneous

(reactant, in catalytic oxidn. for removal of nitrogen oxides from waste gases using **hydrogen peroxide**)

L53 ANSWER 14 OF 21 HCA COPYRIGHT 2003 ACS on STN

118:65829 Air contaminants. (Occupational Safety and Health Administration, U. S. Dep. Labor, Washington, DC, 20210, USA). Federal Register, 57(114, Bk. 2), 26002-601 (English) 12 Jun 1992. CODEN: FEREC. ISSN: 0097-6326.

AB Proposed amendments of existing air contaminant stds. for the maritime and construction industries and extension of air contaminant stds. to agricultural employees (only employees of farms with >10 nonfamily employees are covered) are given under the Federal Occupational Safety and Health Administration. Tables that indicated transitional limits, based on established threshold limit values, indication of skin protection needs, proposed time-weighted av. exposure (any 8-h work shift for 40-h week), short-term exposure limit (15-min time-weighted av.), ceiling (exposure during any part of the work day, or if instantaneous monitoring is not feasible, the 15-min time-weighted av.), and/or skin protection needs are given for the shipyard, marine terminal and longshoring, construction, and agricultural industries. Extensive data on health effects of the substances to be regulated and preliminary regulatory impact analyses are given for general industry and the specific industrial sectors.

IT 7722-84-1, **Hydrogen peroxide**, biological studies 10102-43-9, Nitric oxide, biological studies 10102-44-0, **Nitrogen dioxide**, biological studies

(exposure limits to airborne, in agricultural and construction and maritime industries, stds. for)

L53 ANSWER 15 OF 21 HCA COPYRIGHT 2003 ACS on STN

116:27324 Removal of acids and heavy metals from liquids by neutralization. Boguslawski, Zbigniew (Aquamot A.-G., Switz.). Ger. Offen. DE 4010321 A1 19911002, 14 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1990-4010321 19900330.

AB Acids and heavy metals are removed from wastewaters and acid condensates from heating plants by neutralization using pelletized bases, e.g. Mg(OH)₂, after passage through a layer of bentonite pellets. The treated effluent is then passed through a **layer** of Fe(OH)₃ pellets. The system effectively removes SO₂, SO₃, NO_x, hydrocarbons, and halohydrocarbons and partially oxidizes NO and CO.

IT 7722-84-1, **Hydrogen peroxide**, uses
(in removal of heavy metals and acids from wastewaters by neutralization with manganese hydroxide)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

IT 10102-43-9, Nitric oxide, miscellaneous 10102-44-0
 , **Nitrogen dioxide**, miscellaneous
 (removal of, from wastewaters by neutralization using pelletized
 magnesium hydroxide)
 RN 10102-43-9 HCA
 CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
 CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

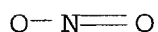
O-N=O

IC ICM C02F001-66
 ICS C02F001-62; B01D053-34; B01D053-18; F23J015-00; B01J020-16
 ICA C01F011-02; C01B033-21; C01G045-02
 CC 60-2 (Waste Treatment and Disposal)
 IT 3811-04-9, Potassium chlorate **7722-84-1, Hydrogen
 peroxide**, uses
 (in removal of heavy metals and acids from wastewaters by
 neutralization with manganese hydroxide)
 IT 630-08-0, Carbon monoxide, miscellaneous 2382-64-1 7439-92-1,
 Lead, miscellaneous 7439-97-6, Mercury, miscellaneous 7440-43-9,
 Cadmium, miscellaneous 7440-47-3, Chromium, miscellaneous
 7440-66-6, Zinc, miscellaneous 7446-09-5, Sulfur dioxide,
 miscellaneous 7446-11-9, Sulfur trioxide, miscellaneous
 10102-43-9, Nitric oxide, miscellaneous 10102-44-0
 , **Nitrogen dioxide**, miscellaneous 11104-93-1,
 Nitrogen oxide, miscellaneous 20427-58-1, Zinc hydroxide
 (removal of, from wastewaters by neutralization using pelletized
 magnesium hydroxide)

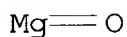
L53 ANSWER 16 OF 21 HCA COPYRIGHT 2003 ACS on STN
 106:72244 Method and apparatus for removing oxides of nitrogen and
 sulfur from combustion gases. Jones, Gordon Dale (USA). PCT Int.
 Appl. WO 8606711 A1 19861120, 107 pp. DESIGNATED STATES: W: AT,
 AU, BR, CH, DE, DK, FI, GB, HU, JP, KP, LK, LU, MC, MG, MW, NL, NO,
 RO, SE, SU; RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE. (English).
 CODEN: PIXXD2. APPLICATION: WO 1985-US1022 19850603. PRIORITY: US
 1985-734393 19850514.
 AB NO is converted to **NO2** by contacting the NO-contg. gas,
 e.g., at .gtorsim.800.degree.F, with an injection gas contg. a
 peroxy initiator, e.g., C3H8, MeOH, or **H2O2**, and
 sufficient O for the conversion, e.g., .apprx.5 .simeq. 20%. The
 process may be the first step in the removal of NOx and SOx from

flue gases; the gas stream leaves the conversion zone with a NO-NO₂ molar ratio of .ltorsim.2:1 and enters an absorption zone where it contacts a particulate absorbent, e.g., NaHCO₃ and/or Na₂CO₃ or Ca(OH)₂, for NO_x and SO_x. The particulate matter may then be removed from the gas stream e.g., with a baghouse filter, and then the gas may be contacted with a metal oxide, e.g., Al₂O₃, to adsorb residual NO_x. Many variations of the method are also claimed along with an app. including a NO conversion section and an absorption section. Thus, when .apprx.2480 ppm C₃H₈ was injected into a flue gas contg. NO, with simultaneous injection of air at 6.2 ft³/h providing 3.7% excess O, 55% of the NO was converted to NO_x at gas temp. 1350.degree.F. The flue gas with decreased NO concn. and increased NO₂ concn. was then treated in a scrubbing section with dry particulate Trona or Nahcolite to remove SO₂, NO₂, and residual NO.

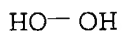
IT 10102-44-0P, Nitrogen dioxide, uses and miscellaneous
(formation and removal of, in flue gas treatment)
RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)



IT 1309-48-4, Magnesia, biological studies 1332-37-2, biological studies 1344-28-1, Alumina, biological studies
(in dry scrubbing of flue gases, for residual nitrogen oxide removal, after oxidn. and scrubbing)
RN 1309-48-4 HCA
CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)



RN 1332-37-2 HCA
CN Iron oxide (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1344-28-1 HCA
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT 7722-84-1, Hydrogen peroxide, reactions
(peroxyl initiator, in oxidn. of nitric oxide in flue gases)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)



IC ICM C01B021-00
ICS C01B021-22

CC 59-4 (Air Pollution and Industrial Hygiene)
ST **nitric oxide oxidn** flue gas; peroxy
initiator **oxidn nitric oxide**;
scrubbing flue gas desulfurization denitration
IT Absorbents
(liq. and particulate, in scrubbing of flue gases with prior
nitric oxide oxidn.)
IT Flue gases
(nitrogen oxide and sulfur oxide removal from, **nitric
oxide oxidn.** and scrubbing for)
IT Scrubbing
(of flue gases, dry and/or wet, with prior **nitric
oxide oxidn.**)
IT Alcohols, uses and miscellaneous
(peroxy initiator, in **oxidn.** of **nitric
oxide** in flue gases)
IT 10102-44-0P, **Nitrogen dioxide**, uses and
miscellaneous
(formation and removal of, in flue gas treatment)
IT 144-55-8, Sodium bicarbonate, biological studies 497-19-8, Sodium
carbonate, biological studies 1305-62-0, Calcium hydroxide,
biological studies
(in dry or wet scrubbing of flue gases, with prior **nitric
oxide oxidn.**)
IT 1309-48-4, Magnesia, biological studies 1314-23-4,
Zirconia, biological studies 1332-37-2, biological studies
1344-28-1, **Alumina**, biological studies
1344-70-3, Copper oxide 12057-24-8, Lithium oxide, biological
studies 13463-67-7, Titania, biological studies 11099-02-8,
Nickel oxide
(in dry scrubbing of flue gases, for residual nitrogen oxide
removal, after **oxidn.** and scrubbing)
IT 60-00-4, EDTA, biological studies 7439-89-6D, Iron, complexes
7720-78-7, Ferrous sulfate
(in wet scrubbing of flue gases, with prior **nitric
oxide oxidn.**)
IT 67-56-1, Methanol, reactions 74-98-6, Propane, reactions
1333-74-0, Hydrogen, reactions 7722-84-1, **Hydrogen
peroxide**, reactions
(peroxy initiator, in **oxidn.** of **nitric
oxide** in flue gases)
IT 12624-32-7
(removal of nitrogen oxides and, from flue gases, **nitric
oxide oxidn.** and scrubbing for)
IT 11104-93-1, uses and miscellaneous
(removal of sulfur oxides and, from flue gases, **nitric
oxide oxidn.** and scrubbing for)
IT 10102-43-9, Nitric oxide, uses and miscellaneous
(removal of, from flue gases, conversion to **nitrogen
dioxide** in, app. and method for)

105:84364 Mathematical modeling of chemically reactive pollutants in indoor air. Nazaroff, William W.; Cass, Glen R. (Environ. Eng. Sci., California Inst. Technol., Pasadena, CA, 91125, USA). Environmental Science and Technology, 20(9), 924-34 (English) 1986. CODEN: ESTHAG. ISSN: 0013-936X.

AB A general math. model is presented for predicting the concns. of chem. reactive compds. in indoor air. The model accounts for the effects of ventilation, filtration, heterogeneous removal, direct emission, and photolytic and thermal chem. reactions. The model is applied to the induction of photochem. reactive pollutants into a museum gallery, and the predicted NO, NOx-NO, and O3 concns. are compared to measured data. The model predicts substantial prodn. of several species due to chem. reaction, including HNO2, HNO3, NO3, and N2O5. Circumstances in which homogeneous chem. may assume particular importance are identified and include buildings with **glass** walls, indoor combustion sources, and direct emission of olefins.

IT 7722-84-1, biological studies 10102-43-9,
biological studies 10102-44-0, biological studies
(indoor air pollution by, prediction of, model for)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

CC 59-2 (Air Pollution and Industrial Hygiene)

IT 50-00-0, biological studies 2278-22-0 3170-83-0 3352-57-6,
biological studies 7697-37-2, biological studies 7722-84-1
, biological studies 7782-77-6 10028-15-6, biological studies
10102-03-1 10102-43-9, biological studies
10102-44-0, biological studies 12033-49-7 26404-66-0
(indoor air pollution by, prediction of, model for)

L53 ANSWER 18 OF 21 HCA COPYRIGHT 2003 ACS on STN

97:60267 Removal of nitrogen oxide from flue gases. (Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57027118 A2 19820213 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1980-101328 19800725.

AB NO is removed from flue gases by catalytic oxidn.-redn. with

H2O2 and NH3, resp. Thus, flue gas contg. 110 ppm NO and 8 vol.% O was mixed with 1.1 and 1.2 equiv. amts. (based on the NO) of NH3 and H2O2, and the mixt. was passed through a V2O5-Al2O3 redox catalyst at 400.degree. to achieve a >95% NO-removal efficiency.

IT 7722-84-1, reactions
(nitric oxide oxidn. by, prior to
redn. with ammonia, in flue gas treatment)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

IC B01D053-36
CC 59-4 (Air Pollution and Industrial Hygiene)
ST nitric oxide removal flue gas; vanadium oxide redox catalyst;
hydrogen peroxide flue gas redn; ammonia flue gas
redn
IT Flue gases
(nitric oxide removal from, by catalytic oxidn.-redn. with
ammonia and **hydrogen peroxide**)
IT Redox reaction catalysts
(vanadium oxide-alumina, for nitric oxide removal from
flue gas with **hydrogen peroxide** and ammonia)
IT 7722-84-1, reactions
(nitric oxide oxidn. by, prior to
redn. with ammonia, in flue gas treatment)
IT 7664-41-7, reactions
(redn. by, of **nitrogen dioxide**, in flue gas
denitration)
IT 1314-62-1, uses and miscellaneous
(redox catalyst, for nitric oxide removal from flue gas with
hydrogen peroxide and ammonia)
IT 10102-43-9, uses and miscellaneous
(removal of, from flue gas, by oxidn.-redn. with **hydrogen
peroxide** and ammonia, redox catalyst for)

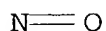
L53 ANSWER 19 OF 21 HCA COPYRIGHT 2003 ACS on STN

96:96706 Analysis of the composition of a gaseous mixture containing nitric oxide and nitrogen peroxide. Alvarez Gonzalez, J. R.; Fernandez Tena, A.; Lara Olivares, A. (Fac. Cienc., Univ. Salamanca, Salamanca, Spain). Afinidad, 38(375), 418-21 (Spanish) 1981. CODEN: AFINAE. ISSN: 0001-9704.

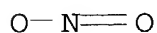
AB NO, NO2, and N2O4 are detd. simultaneously, as NO and NO2, by H2O2 consumption and HNO3 formation. (The equil. mixt. of NO2 and N2O4 is here termed N peroxide.). A glass flask with a capillary stopcock, contg. H2O, is evacuated, flushed with N, and filled with the gaseous mixt. contg. x mol NO and y mol NO2. A known excess of H2O2 is added through the stopcock; after shaking for 15-20 min, the HNO3 formed is titrated with NaOH. After acidifying, excess H2O2

is titrated with KMnO_4 . The compn. of the mixt. is calcd. from $x + y = \text{moles HNO}_3$, and $1.5x + 0.5y = \text{moles H}_2\text{O}_2$ consumed. The error in all cases was $<4\%$.

IT 10102-43-9, analysis
(detn. of, in mixt. with **nitrogen dioxide** by
reaction with **hydrogen peroxide** and
titrimetry)
RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)



IT 10102-44-0, analysis
(detn. of, in mixts. with nitric oxide by reaction with
hydrogen peroxide and titrimetry)
RN 10102-44-0 HCA
CN Nitrogen oxide (NO_2) (8CI, 9CI) (CA INDEX NAME)



CC 79-6 (Inorganic Analytical Chemistry)
ST nitric oxide detn gas mixt; **nitrogen dioxide**
detn gas mixt; oxide nitrogen detn gas mixt; gas mixt analysis
nitrogen oxide; titrimetry analysis nitrogen oxide mixt
IT 10102-43-9, analysis
(detn. of, in mixt. with **nitrogen dioxide** by
reaction with **hydrogen peroxide** and
titrimetry)
IT 10102-44-0, analysis
(detn. of, in mixts. with nitric oxide by reaction with
hydrogen peroxide and titrimetry)
L53 ANSWER 20 OF 21 HCA COPYRIGHT 2003 ACS on STN
92:168156 Comparison of stack sampling methods for nitrogen oxides.
James, Robert E.; Cunningham, James E. (Texas Air Control Board,
Austin, TX, USA). Proceedings, Annual Meeting - Air Pollution
Control Association, 71st. Vol. 3, Paper 78-35.6, 15 pp. (English)
1978. CODEN: PRAPAP. ISSN: 0099-4081.
AB In a simplified method for sampling NO_x emissions, stack gas is
collected in a volumetrically calibrated 0.5-1.2 L **glass**
flow-through bomb. NO and **NO**₂ are converted to NO_3^- by
aq. **H**₂O₂, which is injected immediately after sample
collection. NO_3^- is detd. by the PhOH/disulfonic acid method.
Field testing at 4 fossil fuel-fired boilers showed that the
precision and accuracy of the method equal or exceed those of the US
Environmental Protection Agency's ref. method. The app. can be
transported and the sampling performed by an individual, instead of
the team needed for the ref. method. The method can also be used to
sample NO calibration std. gas cylinders.
IT 10102-43-9, analysis

(sampling of, from calibration gas cylinders)
RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79
IT 10102-43-9, analysis
(sampling of, from calibration gas cylinders)

L53 ANSWER 21 OF 21 HCA COPYRIGHT 2003 ACS on STN
85:24928 Dosimeter for oxides of nitrogen. Ferber, B. I.; Sharp,
Frederick A.; Freedman, Robert W. (Pittsburgh Min. Saf. Res. Cent.,
Bur. Mines, Pittsburgh, PA, USA). American Industrial Hygiene
Association Journal (1958-1999), 37(1), 32-6 (English) 1976. CODEN:
AIHAAP. ISSN: 0002-8894.

AB The personal dosimeter consists of a **glass** filter
impregnated with $\text{Na}_2\text{Cr}_2\text{O}_7$ and H_2SO_4 , for oxidizing NO to **NO₂**
, an unbacked dimethyl silicone membrane, that is permeable to
NO₂, and a chamber contg. an absorbing soln. (H_2SO_4 0.0005
and **H₂O₂** 0.004M) that oxidizes the **NO₂** to **NO₃-**.
The **NO₃-** is detd. by a specific ion electrode. The measurement
precision is good. The oxidizing filter is not used if only
NO₂ monitoring is desired.

IT 10102-43-9, analysis 10102-44-0, analysis
(detn. of, in air, dosimeter for)
RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 49
IT 10102-43-9, analysis 10102-44-0, analysis
(detn. of, in air, dosimeter for)

=> d l54 1-13 cbib abs hitstr hitind

L54 ANSWER 1 OF 13 HCA COPYRIGHT 2003 ACS on STN
138:155822 Process for separation of NO_x from N₂O in a mixture. Chiang,
Chen-chou; Vo, Toan P. (Calgon Carbon Corporation, USA). U.S. US
6517797 B1 20030211, 5 pp. (English). CODEN: USXXAM. APPLICATION:

US 1997-806912 19970226.

AB The present invention is a reactive adsorption process for sepg. NOx (NO and NO₂/N₂O₄) from N₂O in a mixt. The process comprises (A) selectively converting NO to NO₂/N₂O₄ in a mixt. with an oxidant and (B) selectively adsorbing NO₂/N₂O₄ from the mixt. by an adsorbent and .COPYRGT. recovering a stream of N₂O having a substantially reduced NOx concn. The adsorbed NOx can be recovered from the adsorbent by elevated temp., reduced pressure, inert gas purge, water wash or any combination thereof.

IT 1344-28-1, Alumina, uses
(activated; process for sepn. of NOx from N₂O in a mixt. by adsorption)

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7722-84-1, Hydrogen peroxide, reactions
(oxidizing agent; process for sepn. of NOx from N₂O in a mixt. by adsorption)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

IT 1332-37-2, Iron oxide, uses
(process for sepn. of NOx from N₂O in a mixt. by adsorption)

RN 1332-37-2 HCA

CN Iron oxide (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 10102-44-0, Nitrogen dioxide, processes
(process for sepn. of NOx from N₂O in a mixt. by adsorption)

RN 10102-44-0 HCA

CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IT 10102-43-9, Nitric oxide, reactions
(process for sepn. of NOx from N₂O in a mixt. by adsorption)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

IC ICM C01B021-22

ICS B01D053-04

NCL 423400000; 095129000; 423239100; 423402000

CC 49-3 (Industrial Inorganic Chemicals)

IT 1344-28-1, Alumina, uses
(activated; process for sepn. of NOx from N₂O in a mixt. by

- adsorption)
- IT 7722-64-7, Potassium permanganate **7722-84-1**,
Hydrogen peroxide, reactions 7782-44-7, Oxygen,
reactions 10028-15-6, Ozone, reactions
(oxidizing agent; process for sepn. of NOx from N2O in a mixt. by
adsorption)
- IT 1313-99-1, Nickel oxide, uses **1332-37-2**, **Iron**
oxide, uses 1335-30-4, Aluminum silicate 1344-70-3,
Copper oxide (CuOx) 11104-61-3, Cobalt oxide 11129-60-5,
Manganese oxide (MnOx) 12656-44-9, Aluminum carbon oxide
(process for sepn. of NOx from N2O in a mixt. by adsorption)
- IT **10102-44-0**, **Nitrogen dioxide**, processes
10544-72-6, Nitrogen oxide (N2O4)
(process for sepn. of NOx from N2O in a mixt. by adsorption)
- IT **10102-43-9**, Nitric oxide, reactions
(process for sepn. of NOx from N2O in a mixt. by adsorption)

L54 ANSWER 2 OF 13 HCA COPYRIGHT 2003 ACS on STN

138:65146 Low temperature CVD processes for preparing oxide
ferroelectric films using metal alkoxides. Hintermaier, Frank S.;
Van Buskirk, Peter C.; Roeder, Jeffrey F.; Hendrix, Bryan C.; Baum,
Thomas H.; Desrochers, Debra A. (Advanced Technology Materials,
Inc., USA; Infineon Technologies Corporation). U.S. US 6500489 B1
20021231, 18 pp., Cont.-in-part of U. S. 6,303,391. (English).
CODEN: USXXAM. APPLICATION: US 1998-208541 19981209. PRIORITY: US
1996-758599 19961127; US 1997-975087 19971120.

AB CVD is used to form a film of Bi oxide, Sr oxide, and Ta oxide on a
heated substrate by decomp. the precursors of these oxides at the
surface of the substrate. The precursor of Bi oxide is a Bi complex
which includes at least one alkoxide group and is decompd. and
deposited at a temp. <450.degree.. The film of Bi, Sr, and Ta
oxides obtained by low-temp. CVD is predominantly nonferroelec., but
can be converted into a ferroelec. film by a subsequent heating
process.

- IT **7722-84-1**, **Hydrogen peroxide**, processes
10102-43-9, Nitrogen oxide (NO), processes
10102-44-0, **Nitrogen dioxide**, processes
(oxidizer; low temp. CVD processes for prep. oxide ferroelec.
films using metal alkoxides)
- RN 7722-84-1 HCA
- CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

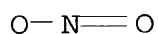
HO-OH

- RN 10102-43-9 HCA
- CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- RN 10102-44-0 HCA

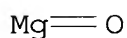
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)



IT 1309-48-4, Magnesium oxide (MgO)
, processes 1344-28-1, Aluminum oxide
(Al₂O₃), processes
(substrate; low temp. CVD processes for prepg. oxide ferroelec.
films using metal alkoxides)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)



RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C23C016-40

NCL 427255310; 427255320; 427314000; 427372200

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 75

IT 7439-88-5, Iridium, uses 7440-04-2, Osmium, uses 7440-05-3,
Palladium, uses 7440-06-4, Platinum, uses 7440-15-5, Rhenium,
uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses
7440-57-5, Gold, uses 12030-48-7, Iridium oxide (IrO)
12030-49-8, Iridium oxide (IrO₂) 12035-99-3, Tungsten oxide (WO)
12036-02-1, Osmium oxide (OsO₂) 12036-09-8, Rhenium oxide (ReO₂)
12036-10-1, Ruthenium oxide (RuO₂)
12036-22-5, Tungsten oxide (WO₂) 12137-18-7, Rhodium oxide (RhO)
12137-27-8, Rhodium oxide (RhO₂) 12143-03-2, Rhenium oxide (ReO)
12143-05-4, Ruthenium oxide (RuO) 116224-72-7,
Bismuth calcium copper strontium oxide (Bi₂Ca₂Cu₃Sr₂O₁₀)
117656-29-8, Barium copper ytterbium oxide (Ba₂Cu₃YbO₆-7)
138290-45-6, Titanium nitride (TiN₀-1) 271779-40-9, Zirconium
nitride (ZrN₀-1) 271779-41-0, Tungsten nitride (WN₀-1.7)
271779-42-1, Tantalum nitride (TaN₀-1.7)

(electrode; low temp. CVD processes for prepg. oxide ferroelec.
films using metal alkoxides)

IT 1304-76-3, Bismuth oxide, processes 1314-11-0, Strontium oxide,
processes 1314-61-0, Tantalum oxide 12010-42-3, Bismuth
iron oxide (BiFeO₃) 12010-48-9, Bismuth niobium
potassium oxide (BiNb₅K₂O₁₅) 12048-25-8, Bismuth potassium
titanium oxide (BiKTi₂O₆) 12161-72-7, Barium bismuth vanadium
oxide (Ba₂BiVO₆) 12231-09-3, Barium bismuth niobium oxide
(Ba₂BiNbO₆) 12231-10-6, Barium bismuth tantalum oxide (Ba₂BiTaO₆)
12231-66-2, Barium bismuth molybdenum oxide (Ba₃Bi₂MoO₉)
12231-67-3, Barium bismuth tungsten oxide (Ba₃Bi₂WO₉) 12232-95-0,
Bismuth manganese oxide (BiMnO₃) 12233-01-1, Bismuth lead niobium
oxide (BiPb₂NbO₆) 12233-04-4, Bismuth lead tantalum oxide
(BiPb₂TaO₆) 12233-27-1, Bismuth lead molybdenum oxide (Bi₂Pb₃MoO₉)

13595-86-3, Bismuth tungsten oxide (Bi₂WO₆) 50811-07-9, Bismuth strontium tantalum oxide (Bi₂SrTa₂O₉) 61163-38-0, Bismuth lead tungsten oxide (Bi₂Pb₃WO₉) 167773-21-9, Bismuth lead vanadium oxide (BiPb₂VO₆) 187239-99-2 188359-86-6, Bismuth niobium strontium tantalum oxide 219534-62-0 219534-64-2 219534-66-4 219534-76-6, Barium bismuth molybdenum oxide (Ba₆BiMoO₁₈) 219534-78-8, Barium bismuth tungsten oxide (Ba₆BiWO₁₈) 219534-79-9, Bismuth lead molybdenum oxide (BiPb₆MoO₁₈) 219534-80-2, Bismuth lead tungsten oxide (BiPb₆WO₁₈)

(low temp. CVD processes for prepg. oxide ferroelec. films using metal alkoxides)

IT 7722-84-1, **Hydrogen peroxide**, processes

7782-44-7, Oxygen, processes 10024-97-2, Nitrogen oxide (N₂O), processes 10028-15-6, Ozone, processes 10102-43-9, Nitrogen oxide (NO), processes 10102-44-0, **Nitrogen dioxide**, processes 12033-49-7, Nitrogen trioxide

(oxidizer; low temp. CVD processes for prepg. oxide ferroelec. films using metal alkoxides)

IT 1303-00-0, Gallium arsenide (GaAs), processes 1309-48-4,

Magnesium oxide (MgO), processes

1314-23-4, Zirconium oxide (ZrO₂), processes 1344-28-1,

Aluminum oxide (Al₂O₃), processes

7631-86-9, Silicon oxide (SiO₂), processes 12033-89-5, Silicon nitride (Si₃N₄), processes 12047-27-7, Barium titanium oxide (BaTiO₃), processes 12060-00-3, Lead titanium oxide (PbTiO₃) 12060-59-2, Strontium titanium oxide (SrTiO₃)

(substrate; low temp. CVD processes for prepg. oxide ferroelec. films using metal alkoxides)

L54 ANSWER 3 OF 13 HCA COPYRIGHT 2003 ACS on STN

137:267469 Populations at risk. Pedersen, David H.; Young, Randy O.; Rose, Vernon E. (National Institute for Occupational Safety and Health, Cincinnati, OH, USA). Patty's Toxicology (5th Edition), Volume 8, 699-1080. Editor(s): Bingham, Eula; Cohrssen, Barbara; Powell, Charles H. John Wiley & Sons, Inc.: New York, N. Y. ISBN: 0-471-31943-0 (English) 2001. CODEN: 69CWST.

AB The recognition and anticipation of potential occupational health problems, followed by assessment of occupational health risks based on chem., phys., or biol. properties of toxic agents and their potential contact or exposure under use conditions, in the practice of industrial hygiene and toxicol. for worker populations at risk is discussed. Topics covered include: background (Industrial Classification, Occupational Classification Codes, Chem. Master, Facilities, Exposure, and Trade Named Ingredients files); data source considerations; data display considerations; calcn. and display of ests. (industry-specific exposure concn. by facility employment size, industry-specific exposure concns., all industries exposure concn. by facility employment size, summary est.). An appendix displays information on the industrial distribution potential occupational exposures to >300 selected chem. agents or groups of agents in 290 tables.

- IT 1309-37-1, Iron oxide (Fe_2O_3),
biological studies 1309-48-4, Magnesium
oxide (MgO), biological studies 1344-28-1
, Aluminum oxide, biological studies
7722-84-1, Hydrogen peroxide, biological
studies 10102-43-9, Nitric oxide, biological studies
10102-44-0, Nitrogen dioxide, biological
studies
(industry-specific workplace populations at risk from exposure to
or contact with toxic chem. agents)
- L54 ANSWER 4 OF 13 HCA COPYRIGHT 2003 ACS on STN
137:227842 Assignment of skin notation for maximum allowable
concentration (MAC) list in Poland. Czerczak, Slawomir; Kupczewska,
Malgorzata (Nofer Institute of Occupational Medicine, Lodz, Pol.).
Applied Occupational and Environmental Hygiene, 17(3), 187-199
(English) 2002. CODEN: AOEHE9. ISSN: 1047-322X. Publisher: Taylor
& Francis Ltd..
- AB Org. chems. from the Polish max. allowable concn. (MAC) list were
analyzed for skin notation. It can be concluded that the dermal
dose LD50s detd. on exptl. animals ought to be adopted as the
fundamental criterion for providing a substance with the
percutaneous absorption notation in the MAC list. All chems. with
LD50s value below 1000 mg/kg should be provided with the Sk index in
the MAC list. For other chems., a skin notation would be considered
when repeated human and dermal application tests have shown
significant systemic effects following exposure. When information
on the characteristics specified above were not available,
physicochem. data required to calc. the flow (soly., octanol/water
partition coeff., mol. wt.) were obtained to consider a skin
notation.
- IT 1344-28-1, Aluminum trioxide, biological
studies 7722-84-1, Hydrogen peroxide,
biological studies 10102-43-9, Nitrogen oxide (NO),
biological studies 10102-44-0, Nitrogen oxide (NO2
) , biological studies
(assignment of skin notation for max. allowable concn. list in
Poland)
- L54 ANSWER 5 OF 13 HCA COPYRIGHT 2003 ACS on STN
136:394474 Method of forming a layer comprising tungsten oxide in
capacitor and field effect transistor. Yang, Haining (Micron
Technology, Inc., USA). U.S. US 6391801 B1 20020521, 12 pp.
(English). CODEN: USXXAM. APPLICATION: US 1999-388731 19990901.
- AB The invention includes capacitors, capacitor forming methods, field
effect transistors, and field effect transistor forming methods. A
method of forming a layer including W oxide includes forming a 1st
layer including W nitride over a substrate. The W nitride is
oxidized under conditions effective to form a 2nd layer at least a
majority of which is W trioxide. A capacitor forming method
includes forming a 1st capacitor electrode layer over a substrate.

A 2nd layer including W nitride is formed over the 1st capacitor electrode layer. A 3rd capacitor electrode layer is formed over the 2nd layer. The 2nd layer is oxidized under conditions effective to transform at least some of the W nitride into a W trioxide comprising capacitor dielec. layer. Other capacitor forming methods are contemplated. The invention also includes capacitors formed by these and other methods. A method of forming a field effect transistor includes forming a W nitride comprising layer proximate .gtoreq.1 of a semiconductive channel region or a conductive gate layer. The W nitride comprising layer is oxidized under conditions effective to transform at least some of the W nitride to a W oxide comprising gate dielec. layer. A transistor gate is provided operably proximate the gate dielec. layer, and source/drain regions are provided operably proximate the transistor gate.

IT 11113-84-1, **Ruthenium oxide**

(capacitor electrode; method of forming a tungsten oxide layer in capacitor and FET by oxidn. of tungsten nitride layer formed by low pressure CVD)

RN 11113-84-1 HCA

CN Ruthenium oxide (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7722-84-1, **Hydrogen peroxide**, processes

10102-43-9, Nitrogen oxide (NO), processes

10102-44-0, Nitrogen oxide (NO₂), processes

(method of forming a tungsten oxide layer in capacitor and FET by oxidn. of tungsten nitride layer formed by low pressure CVD)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO—OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA

CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

O—N=O

IC ICM H01L021-31

ICS H01L021-44; H01L021-469

NCL 438785000

CC 76-10 (Electric Phenomena)

Section cross-reference(s): 57

IT 7429-90-5, Aluminum, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-50-8, Copper, uses 11113-84-1,

Ruthenium oxide 11116-16-8, **Titanium nitride** 12680-36-3, **Rhodium oxide** 13463-67-7, **Titanium oxide**, uses (capacitor electrode; method of forming a tungsten oxide layer in capacitor and FET by oxidn. of tungsten nitride layer formed by low pressure CVD)

IT **7722-84-1, Hydrogen peroxide**, processes 7782-44-7, **Oxygen**, processes 10024-97-2, **Nitrogen oxide (N2O)**, processes 10028-15-6, **Ozone**, processes **10102-43-9**, **Nitrogen oxide (NO)**, processes **10102-44-0**, **Nitrogen oxide (NO2)**, processes (method of forming a tungsten oxide layer in capacitor and FET by oxidn. of tungsten nitride layer formed by low pressure CVD)

L54 ANSWER 6 OF 13 HCA COPYRIGHT 2003 ACS on STN

134:282739 Procedure for the treatment of malodorous gas. Han, Seong-Hwan; Jung, Kwang-Deog; Joo, Oh-Shim; Cho, Seong-Hoon; Oh, Jun-Woo (Korea Institute of Science and Technology, S. Korea). Ger. Offen. DE 10049545 A1 20010412, 10 pp. (German). CODEN: GWXXBX. APPLICATION: DE 2000-10049545 20001006. PRIORITY: KR 1999-43008 19991006.

AB Malodorous gases are treated economically and efficiently with ambient temp. and pressure by a catalytic absorption and oxidn. procedure, which cover: (a) in-contact-bringing the malodorous gases with a scrubbing water, contg. a catalyst, in order to absorb the malodorous components catalytically, and (b) to the resulting soln., contg. the malodorous components, a catalytic oxidn. subject to their contacting with an oxidizing agent in the presence of the catalyst at 0-100.degree. under an ambient pressure whereby the catalyst is an active metallic element enclosure, selected from alkali -, alk.-earth and/or transition metals, and an optional oxide substrate.

IT **7722-84-1, Hydrogen peroxide**, reactions **10102-43-9**, **Nitrogen oxide (NO)**, reactions **10102-44-0**, **Nitrogen oxide (NO2)**, reactions (oxidizer; procedure for treatment of malodorous gas)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IT 1309-48-4, **Magnesium oxide**, uses
 1332-37-2, **Iron oxide**, uses
 1344-28-1, **Alumina**, uses
 (procedure for treatment of malodorous gas)
 RN 1309-48-4 HCA
 CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)

Mg=O

RN 1332-37-2 HCA
 CN Iron oxide (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 IC B01D053-77; B01D053-86
 CC 48-1 (Unit Operations and Processes)
 Section cross-reference(s): 59, 67
 IT 7681-52-9, Sodium hypochlorite **7722-84-1, Hydrogen peroxide**, reactions 7782-44-7, Oxygen, reactions 10024-97-2, Nitrogen oxide (N₂O), reactions 10028-15-6, Ozone, reactions **10102-43-9**, Nitrogen oxide (NO), reactions **10102-44-0**, Nitrogen oxide (NO₂), reactions 11104-93-1, Nitrogen oxide, reactions (oxidizer; procedure for treatment of malodorous gas)
 IT 1304-28-5, Barium oxide, uses 1304-76-3, Bismuth oxide, uses 1305-78-8, Calcium oxide, uses 1306-19-0, Cadmium oxide, uses **1309-48-4, Magnesium oxide**, uses 1312-43-2, Indium oxide 1314-11-0, Strontium oxide, uses 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium oxide, uses 1314-35-8, Tungsten oxide, uses 1314-61-0, Tantalum oxide 1327-33-9, Antimony oxide 1332-29-2, Tin oxide **1332-37-2, Iron oxide**, uses 1335-25-7, Lead oxide, **1344-28-1, Alumina**, uses 7631-86-9, Silica, uses 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium oxide 11118-57-3, Chromium oxide 11129-60-5, Manganese oxide 12024-21-4, Gallium oxide 12055-23-1, Hafnium oxide 12627-00-8, Niobium oxide 12640-89-0, Selenium oxide 12777-38-7, Arsenic oxide 13463-67-7, Titanium oxide, uses 157858-56-5, Germanium oxide
 (procedure for treatment of malodorous gas)

L54 ANSWER 7 OF 13 HCA COPYRIGHT 2003 ACS on STN
 133:25621 Low temperature CVD processes for preparing ferroelectric films using bi aryls. Hintermaier, Frank S.; Van Buskirk, Peter C.; Roeder, Jeffrey F.; Hendrix, Bryan C.; Baum, Thomas H.; Desrochers, Debra A. (Infineon Technologies A.-G., Germany; Advanced Technology Materials, Inc.). PCT Int. Appl. WO 2000034550 A2 20000615, 37 pp. DESIGNATED STATES: W: CN, JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN:

PIXXD2. APPLICATION: WO 1999-US28833 19991206. PRIORITY: US
1998-208544 19981209.

AB CVD was used to form a film of Bi oxide, Sr oxide, and Ta oxide on a heated substrate by decomp. the precursors of these oxides adjacent to the substrate. The precursor of Bi oxide is a Bi complex which includes at least one aryl group and is decompd. at a decompn. temp. <450.degree.. The film of Bi, Sr, and Ta oxides obtained by low-temp. CVD is predominantly nonferroelec., but can be converted into a ferroelec. film by a subsequent heating process.

IT 7722-84-1, **Hydrogen peroxide**, uses
10102-43-9, Nitric oxide, uses 10102-44-0,
Nitrogen dioxide, uses
(low temp. CVD processes for prepg. ferroelec. films using
bismuth aryls and annealing)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IT 1309-48-4, **Magnesia**, uses 1344-28-1,
Alumina, uses

(substrate; low temp. CVD processes for prepg. ferroelec. films
using bismuth aryls and annealing)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)

Mg=O

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC ICM C23C016-00

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 75

IT 67-63-0, Isopropanol, uses 109-99-9, uses 111-65-9, Octane, uses
111-84-2, Nonane 112-40-3, Dodecane 112-49-2D, Triglyme,
strontium complex 124-18-5, Decane 143-24-8, Tetraglyme
143-24-8D, Tetraglyme, strontium complex 437-29-6 603-33-8,

Triphenylbismuth 603-33-8D, Triphenylbismuth, derivs. 629-50-5,
 Tridecane 629-59-4, Tetradecane 1120-21-4, Undecane
 3030-47-5D, strontium complex 3083-10-1D, N,N,N',N'',N''',N''''-
 Hexamethyltriethylenetetramine, strontium complex 5142-75-6
 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7440-69-9D,
 Bismuth, diaryl compds., uses **7722-84-1, Hydrogen**
peroxide, uses 7727-37-9, Nitrogen, uses 7782-44-7,
 Oxygen, uses 10024-97-2, Nitrogen oxide (N₂O), uses 10028-15-6,
 Ozone, uses 10050-08-5 **10102-43-9**, Nitric oxide, uses
10102-44-0, Nitrogen dioxide, uses
 12033-49-7, Nitrogen oxide (NO₃) 26919-48-2 33397-21-6
 34422-57-6 36830-74-7 36830-74-7D, adduct 59344-64-8
 126769-20-8 146096-43-7 150939-76-7 177580-53-9 271788-83-1
 271789-40-3 271789-42-5 271789-43-6 271789-44-7

(low temp. CVD processes for prepg. ferroelec. films using
 bismuth aryls and annealing)

IT 11103-32-5P, Bismuth iron lanthanum titanium oxide (Bi₄FeLaTi₃O₁₅)
 11103-33-6P, Bismuth iron praseodymium titanium oxide
 (Bi₄FePrTi₃O₁₅) 12010-42-3P, Bismuth **iron oxide**
 (BiFeO₃) 12010-48-9P, Bismuth niobium potassium oxide (BiNb₅K₂O₁₅)
 12010-77-4P, Bismuth titanium oxide (Bi₄Ti₃O₁₂) 12047-47-1P,
 Barium bismuth titanium oxide (Ba₂Bi₄Ti₅O₁₈) 12048-25-8P, Bismuth
 potassium titanium oxide (BiK₂Ti₂O₆) 12161-72-7P, Barium bismuth
 vanadium oxide (Ba₂BiVO₆) 12231-09-3P, Barium bismuth niobium
 oxide (Ba₂BiNbO₆) 12231-10-6P, Barium bismuth tantalum oxide
 (Ba₂BiTaO₆) 12231-66-2P, Barium bismuth molybdenum oxide
 (Ba₃Bi₂MoO₉) 12231-67-3P, Barium bismuth tungsten oxide
 (Ba₃Bi₂WO₉) 12232-95-0P, Bismuth manganese oxide (BiMnO₃)
 12233-01-1P, Bismuth lead niobium oxide (BiPb₂NbO₆) 12233-04-4P,
 Bismuth lead tantalum oxide (BiPb₂TaO₆) 12233-27-1P, Bismuth lead
 molybdenum oxide (Bi₂Pb₃MoO₉) 12297-25-5P, Barium bismuth titanium
 oxide (BaBi₄Ti₄O₁₅) 12297-31-3P, Bismuth calcium titanium oxide
 (Bi₄CaTi₄O₁₅) 12297-32-4P, Bismuth lead titanium oxide
 (Bi₄PbTi₄O₁₅) 12297-33-5P, Bismuth strontium titanium oxide
 (Bi₄SrTi₄O₁₅) 12297-34-6P, Bismuth iron titanium oxide
 (Bi₅FeTi₃O₁₅) 12297-36-8P, Bismuth iron titanium oxide
 (Bi₉Fe₅Ti₃O₂₇) 12350-18-4P, Bismuth tantalum titanium oxide
 (Bi₃TaTiO₉) 12431-25-3P, Bismuth holmium titanium oxide
 (Bi₃HoTi₃O₁₂) 12431-26-4P, Bismuth lanthanum titanium oxide
 (Bi₃LaTi₃O₁₂) 12431-28-6P, Bismuth praseodymium titanium oxide
 (Bi₃PrTi₃O₁₂) 12441-60-0P, Bismuth calcium titanium oxide
 (Bi₄Ca₂Ti₅O₁₈) 12441-63-3P, Bismuth lead titanium oxide
 (Bi₄Pb₂Ti₅O₁₈) 12441-64-4P, Bismuth strontium titanium oxide
 (Bi₄Sr₂Ti₅O₁₈) 12441-66-6P, Bismuth calcium iron titanium oxide
 (Bi₅CaFeTi₄O₁₈) 12441-67-7P, Bismuth iron lead titanium oxide
 (Bi₅FePbTi₄O₁₈) 12441-68-8P, Bismuth iron strontium titanium oxide
 (Bi₅FeSrTi₄O₁₈) 12448-50-9P, Barium bismuth iron titanium oxide
 (BaBi₅FeTi₄O₁₈) 12774-73-1P, Bismuth niobium titanium oxide
 (Bi₃NbTiO₉) 13595-86-3P, Bismuth tungsten oxide (Bi₂WO₆)
 50811-07-9P, Bismuth strontium tantalum oxide (Bi₂SrTa₂O₉)
 51403-91-9P, Bismuth niobium strontium oxide (Bi₂Nb₂SrO₉)
 61163-38-0P, Bismuth lead tungsten oxide (Bi₂Pb₃WO₉) 156832-05-2P,

Bismuth niobium strontium tantalum oxide (Bi₂NbO₃-2SrTaO₃-2O₉)
 167773-21-9P, Bismuth lead vanadium oxide (BiPb₂VO₆) 187239-99-2P
 219534-62-0P 219534-64-2P 219534-66-4P 219534-68-6P
 219534-70-0P 219534-72-2P 219534-74-4P, Bismuth iron titanium
 oxide (Bi₆FeTi₃O₁₈) 219534-76-6P, Barium bismuth molybdenum oxide
 (Ba₆BiMoO₁₈) 219534-78-8P, Barium bismuth tungsten oxide
 (Ba₆BiWO₁₈) 219534-79-9P, Bismuth lead molybdenum oxide
 (BiPb₆MoO₁₈) 219534-80-2P, Bismuth lead tungsten oxide (BiPb₆WO₁₈)
 (low temp. CVD processes for prep. ferroelec. films using
 bismuth aryls and annealing)

IT 1303-00-0, Gallium arsenide, uses 1309-48-4, Magnesia,
 uses 1314-23-4, Zirconia, uses 1344-28-1,
Alumina, uses 12033-89-5, Silicon nitride, uses
 12047-27-7, Barium titanate, uses 12060-00-3, Lead titanate
 12060-59-2, Strontium titanate
 (substrate; low temp. CVD processes for prep. ferroelec. films
 using bismuth aryls and annealing)

L54 ANSWER 8 OF 13 HCA COPYRIGHT 2003 ACS on STN

127:8444 Exposure limits for health - inorganic compounds. Yaws, Carl
 L.; Sheth, Sachin D.; Han, Mei (Lamar Univ., Beaumont, TX, USA).
 Handbook of Chemical Compound Data for Process Safety, 210-214.
 Gulf Publishing: Houston, Tex. (English) 1997. CODEN: 64MXAT.

AB Results for recommended and permissible exposure limits in air to
 safeguard health are presented for major inorg. chem. compds.
 Results are displayed in an easy-to-use table which is esp.
 applicable for rapid engineering use. The inorg. chems. encompass
 Ag to Zr compds.

IT 1309-48-4, **Magnesium oxide (MgO)**
), biological studies 1344-28-1, **Aluminum**
oxide, biological studies 7722-84-1,
Hydrogen peroxide, biological studies
 10102-43-9, Nitric oxide, biological studies
 10102-44-0, **Nitrogen dioxide**, biological
 studies
 (recommended and permissible exposure limits for inorg. compds.
 in workplace air to safeguard health)

RN 1309-48-4 HCA

CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)

Mg=O

RN 1344-28-1 HCA

CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7722-84-1 HCA

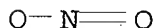
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
 CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)



RN 10102-44-0 HCA
 CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)



CC 59-5 (Air Pollution and Industrial Hygiene)

Section cross-reference(s): 4, 49

IT 74-90-8, Hydrogen cyanide, biological studies 75-15-0, Carbon disulfide, biological studies 75-44-5, Carbonic dichloride 124-38-9, Carbon dioxide, biological studies 143-33-9, Sodium cyanide 151-50-8, Potassium cyanide 302-01-2, Hydrazine, biological studies 630-08-0, Carbon monoxide, biological studies 1306-19-0, Cadmium oxide, biological studies **1309-48-4, Magnesium oxide (MgO)**, biological studies 1310-58-3, Potassium hydroxide, biological studies 1310-73-2, Sodium hydroxide, biological studies 1314-13-2, Zinc oxide, biological studies 1314-80-3, Phosphorus pentasulfide **1344-28-1, Aluminum oxide**, biological studies 2551-62-4 2699-79-8, Sulfuryl fluoride 7429-90-5, Aluminum, biological studies 7439-92-1, Lead, biological studies 7439-96-5, Manganese, biological studies 7439-98-7, Molybdenum, biological studies 7440-02-0, Nickel, biological studies 7440-06-4, Platinum, biological studies 7440-16-6, Rhodium, biological studies 7440-21-3, Silicon, biological studies 7440-22-4, Silver, biological studies 7440-25-7, Tantalum, biological studies 7440-31-5, Tin, biological studies 7440-33-7, Tungsten, biological studies 7440-36-0, Antimony, biological studies 7440-38-2, Arsenic, biological studies 7440-41-7, Beryllium, biological studies 7440-43-9, Cadmium, biological studies 7440-44-0, Carbon, biological studies 7440-47-3, Chromium, biological studies 7440-48-4, Cobalt, biological studies 7440-50-8, Copper, biological studies 7440-58-6, Hafnium, biological studies 7440-61-1, Uranium, biological studies 7440-65-5, Yttrium, biological studies 7440-67-7, Zirconium, biological studies 7440-74-6, Indium, biological studies 7446-09-5, Sulfur dioxide, biological studies 7553-56-2, Iodine, biological studies 7580-67-8, Lithium hydride 7616-94-6, Perchloryl fluoride 7631-86-9, Silicon dioxide, biological studies 7637-07-2, Boron trifluoride, biological studies 7646-85-7, Zinc chloride (ZnCl2), biological studies 7647-01-0, Hydrogen chloride, biological studies 7664-39-3, Hydrogen fluoride, biological studies 7664-41-7, Ammonia, biological studies 7664-93-9, Sulfuric acid, biological studies 7681-49-4, Sodium fluoride, biological studies 7697-37-2, Nitric acid, biological studies 7705-08-0, Ferric chloride, biological studies **7722-84-1,**

Hydrogen peroxide, biological studies 7726-95-6,
 Bromine, biological studies 7758-94-3, Ferrous chloride
 7782-41-4, Fluorine, biological studies 7782-49-2, Selenium,
 biological studies 7782-50-5, Chlorine, biological studies
 7783-06-4, Hydrogen sulfide, biological studies 7783-07-5,
 Hydrogen selenide 7783-41-7, Fluorine oxide 7783-54-2, Nitrogen
 trifluoride 7783-79-1, Selenium hexafluoride 7783-80-4,
 Tellurium hexafluoride 7784-42-1, Arsine 7790-91-2, Chlorine
 trifluoride 7803-51-2, Phosphine 7803-52-3, Stibine 7803-62-5,
 Silane, biological studies 10024-97-2, Nitrous oxide, biological
 studies 10025-87-3, Phosphorus oxychloride 10026-13-8,
 Phosphorus pentachloride 10028-15-6, Ozone, biological studies
 10035-10-6, Hydrogen bromide, biological studies 10049-04-4,
 Chlorine dioxide 10102-43-9, Nitric oxide, biological
 studies 10102-44-0, **Nitrogen dioxide**,
 biological studies 10546-01-7, Sulfur pentafluoride 12125-02-9,
 Ammonium chloride, biological studies 13463-39-3, Nickel carbonyl
 13463-40-6, Iron pentacarbonyl 13494-80-9, Tellurium, biological
 studies 19287-45-7, Diborane 19624-22-7, Pentaborane
 20762-59-8, Phosphorus tetrachloride
 (recommended and permissible exposure limits for inorg. compds.
 in workplace air to safeguard health)

L54 ANSWER 9 OF 13 HCA COPYRIGHT 2003 ACS on STN

121:262443 French limiting values for occupational exposure to
 chemicals. Anon. (Fr.). Cahiers de Notes Documentaires, 153,
 557-74 (French) 1993. CODEN: CNDIBJ. ISSN: 0007-9952.

AB Limit values (suggested limiting values and max. permissible values)
 for occupational exposure to chems., including carcinogens, which
 have been published by the French Labor Ministry are presented in
 one table. This table is preceded by information on the following
 points: monitoring of workplace atmospheres (sampling and anal.;
 aerosols); permitted values (definitions and aims; additivity
 convention; elements and compds.; limiting occupational exposure
 values; carcinogens); mandatory values; and values recommended by
 the French National Health Insurance Fund (CNAM).

IT 1309-37-1, Ferric oxide, biological studies
 1309-48-4, **Magnesium oxide**, biological
 studies 1344-28-1, **Aluminum oxide** (
 Al₂O₃), biological studies 7722-84-1,
Hydrogen peroxide, biological studies
 10102-43-9, Nitrogen oxide (NO), biological studies
 10102-44-0, **Nitrogen dioxide**, biological
 studies

(occupational exposure; occupational exposure and stds. for
 limiting workplace concns. of chems. in France)

L54 ANSWER 10 OF 13 HCA COPYRIGHT 2003 ACS on STN

116:135528 Performance-oriented packaging standards; changes to
 classification, hazard communication, packaging and handling
 requirements based on UN standards and agency initiative. (United

States Dept. of Transportation, Washington, DC, 20590-0001, USA).
Federal Register, 55(246), 52402-729 (English) 21 Dec 1990. CODEN:
FEREAC. ISSN: 0097-6326.

AB The hazardous materials regulations under the Federal Hazardous
Materials Transportation Act are revised based on the United Nations
recommendations on the transport of dangerous goods. The
regulations cover the classification of materials, packaging
requirements, and package marking, labeling, and shipping
documentation, as well as transportation modes and handling, and
incident reporting. Performance-oriented stds. are adopted for
packaging for bulk and nonbulk transportation, and SI units of
measurement generally replace US customary units. Hazardous
material descriptions and proper shipping names are tabulated
together with hazard class, identification nos., packing group,
label required, special provisions, packaging authorizations,
quantity limitations, and vessel stowage requirements.

IT 1332-37-2, **Iron oxide**, properties
7722-84-1, **Hydrogen peroxide** (
H2O2), miscellaneous 10102-43-9, Nitric oxide,
miscellaneous 10102-44-0, **Nitrogen
dioxide**, miscellaneous
(packaging and transport of, stds. for)

L54 ANSWER 11 OF 13 HCA COPYRIGHT 2003 ACS on STN

112:39443 Comparison of methods for calculating the composition and
thermodynamic properties of the combustion products of organic
fuels. Mika, V. I.; Munvez, S. S.; Prokop, A. S.; Vujevic, V.;
Lekic, A.; Popovic, A. (Mosk. Energ. Inst., Moscow, USSR).
Teplofizika Vysokikh Temperatur, 27(4), 702-7 (Russian) 1989.
CODEN: TVYTAP. ISSN: 0040-3644.

AB Three methods were evaluated for the calcn. of the thermodyn.
properties and compn. of products of combustion of CH4 and coal at
1000-3000 K and 0.1 MPa in the presence of K2CO3 (ionization
additive). There were no substantial differences among the results
obtained by these methods, provided the input data and condensation
models were the same. Condensation models have a much larger impact
on the result.

IT 1309-37-1, **Ferric oxide**, uses and miscellaneous
1309-48-4, **Magnesium oxide**, uses and
miscellaneous 1344-28-1, **Alumina**, uses and
miscellaneous 7722-84-1, **Hydrogen
peroxide**, uses and miscellaneous 10102-43-9,
Nitric oxide, uses and miscellaneous 10102-44-0, Nitrogen
oxide (NO2), uses and miscellaneous
(in combustion products of methane and coal, abundance of, calcn.
of, methods for, comparison of)

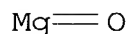
RN 1309-37-1 HCA

CN Iron oxide (Fe2O3) (8CI, 9CI) (CA INDEX NAME)

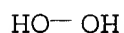
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1309-48-4 HCA

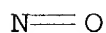
CN Magnesium oxide (MgO) (9CI) (CA INDEX NAME)



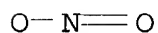
RN 1344-28-1 HCA
CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)



RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)



RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)



CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 69
IT 124-38-9, Carbon dioxide, uses and miscellaneous 630-08-0, Carbon
monoxide, uses and miscellaneous 1305-78-8, Calcium oxide, uses
and miscellaneous 1309-37-1, Ferric oxide, uses and
miscellaneous 1309-48-4, **Magnesium oxide**
, uses and miscellaneous 1310-58-3, Potassium hydroxide, uses and
miscellaneous 1310-73-2, Sodium hydroxide, uses and miscellaneous
1333-74-0, Hydrogen, uses and miscellaneous 1344-28-1,
Alumina, uses and miscellaneous 3170-83-0, Hydroperoxo
3352-57-6, Hydroxyl, uses and miscellaneous 7429-90-5, Aluminum,
uses and miscellaneous 7439-89-6, Iron, uses and miscellaneous
7439-95-4, Magnesium, uses and miscellaneous 7440-09-7, Potassium,
uses and miscellaneous 7440-21-3, Silicon, uses and miscellaneous
7440-23-5, Sodium, uses and miscellaneous 7440-37-1, Argon, uses
and miscellaneous 7440-44-0, Carbon, uses and miscellaneous
7440-70-2, Calcium, uses and miscellaneous 7446-09-5, Sulfur
dioxide, uses and miscellaneous 7446-11-9, Sulfur trioxide, uses
and miscellaneous 7631-86-9, Silica, uses and miscellaneous
7704-34-9, Sulfur, uses and miscellaneous 7722-84-1,
Hydrogen peroxide, uses and miscellaneous
7727-37-9, Nitrogen, uses and miscellaneous 7732-18-5, Water, uses
and miscellaneous 7778-80-5, Potassium sulfate, uses and
miscellaneous 7782-44-7, Oxygen, uses and miscellaneous
10006-28-7, Potassium silicate (K₂SiO₃) 10024-97-2, Nitrous oxide,
uses and miscellaneous 10102-43-9, Nitric oxide, uses and
miscellaneous 10102-44-0, Nitrogen oxide (NO₂),

uses and miscellaneous 12004-36-3, **Aluminum oxide** (Al₂O₃) 12136-45-7, Potassium oxide, uses and miscellaneous 13827-32-2, Sulfur monoxide 14457-64-8, **Aluminum oxide** (AlO) 18624-44-7, Ferrous hydroxide

(in combustion products of methane and coal, abundance of, calcn. of, methods for, comparison of)

L54 ANSWER 12 OF 13 HCA COPYRIGHT 2003 ACS on STN

110:218230 Air contaminants. (United States Occupational Safety and Health Administration, Washington, DC, 20210, USA). Federal Register, 54(12, Bk. 2), 2332-983 (English) 19 Jan 1989. CODEN: FEREAC. ISSN: 0097-6326.

AB Under the Federal Occupational Safety and Health act, OSHA is amending existing air containment stds. and setting new permissible exposure limits for toxic substances commonly used in the workplace.

IT 1309-37-1, **Iron oxide**, biological studies 1309-48-4, **Magnesium oxide**, biological studies 1344-28-1, .alpha.-**Alumina**, biological studies 7722-84-1, **Hydrogen peroxide**, biological studies 10102-43-9, Nitric oxide, biological studies 10102-44-0, **Nitrogen dioxide**, biological studies

(air pollution by, occupational exposure to, stds. for, in USA)

L54 ANSWER 13 OF 13 HCA COPYRIGHT 2003 ACS on STN

85:83876 Approximation coefficients of the thermodynamic potential for substances formed by aluminum, boron, carbon, calcium, chlorine, copper, fluorine, hydrogen, potassium, lithium, magnesium, nitrogen, sodium, oxygen, phosphorus, sulfur, silicon, and titanium atoms in a temperature range up to 6000 K. Rozhdestvenskii, I. B.; Gutov, V. N.; Zhigul'skaya, N. A. (USSR). Sbornik Trudov - Energeticheskii Institut imeni G. M. Krzhizhanovskogo, 7, 88-121 (Russian) 1973. CODEN: STGIDG.

AB By using published thermodyn. data (handbooks, thermochem. tables) the approxn. coeffs. for calcg. free energy function (F-H)/T are given for >1000 compds. (consisting of the 18 title elements) in solid, liq., and gaseous states were computer calcd. The enthalpies of the compds. are listed also.

IT 1309-48-4, properties 1344-28-1, properties 7722-84-1, properties 10102-43-9, properties 10102-44-0, properties (thermodyn. of)

=> d 155 1-28 cbib abs hitstr hitind

L55 ANSWER 1 OF 28 HCA COPYRIGHT 2003 ACS on STN

137:283406 Desulfurization apparatus and method for efficient desulfurization even in presence of nitrogen monoxide. Yoshikawa, Masaaki; Yasutake, Akinori; Kurisaki, Takashi; Kobayashi, Keiko

(Osaka Gas Co., Ltd., Japan; Mitsubishi Heavy Industries, Ltd.).
Jpn. Kokai Tokkyo Koho JP 2002301335 A2 20021015, 9 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 2001-105384 20010404.

AB The flue gas desulfurization app. comprises a desulfurization tower contg. a porous carbon material selected from activated carbon and activated carbon fibers and is further provided with a **NO2** gas introduction app. for introducing **NO2** into the tower. Alternatively, a NO oxidn. app. for oxidizing NO to **NO2** is installed in the upstream side of the tower. The NO oxidn. app. may comprise an elec. discharge oxidn. means, an oxidn. catalyst, an ozone oxidn. means, and/or a **H2O2** oxidn. means. Desulfurization is carried out by bringing a SO2-contg. flue gas into contact with the porous carbon material while introducing **NO2** gas into the tower. While desulfurization inhibition by NO being suppressed, SO2 can be efficiently removed from a flue gas emitted out of a boiler, a thermal power plant, a variety of plants and so on.

IT **10102-44-0, Nitrogen dioxide,**
miscellaneous
(desulfurization in presence of; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O=N=O

IT **7722-84-1, Hydrogen peroxide, processes**
(nitrogen monooxide oxidn. by; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

IT **10102-43-9, Nitrogen monooxide, processes**
(**oxidn.** in desulfurization; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

IC ICM B01D053-86

CC 59-4 (Air Pollution and Industrial Hygiene)

IT Carbon fibers, uses
(activated; flue gas desulfurization app. and method using carbon

- type porous material with means for supplying **nitrogen dioxide**)
- IT Flue gases
(boiler, sulfur oxide removal from; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT Flue gas desulfurization
(flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT Electric discharge
Oxidation catalysts
(nitrogen monoxide oxidn. by; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT Oxidation
(of nitrogen monoxide; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT 7440-44-0, Carbon, uses
(activated; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT 10102-44-0, Nitrogen dioxide, miscellaneous
(desulfurization in presence of; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT 7647-01-0, Hydrogen chloride, processes 7697-37-2, Nitric acid, processes 7790-92-3, Hypochlorous acid 13465-41-3, Permanganic acid
(nitrogen monoxid oxidn. assisted by; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT 7722-84-1, Hydrogen peroxide, processes
7782-44-7, Oxygen, processes 10028-15-6, Ozone, processes
(nitrogen monoxide oxidn. by; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT 10102-43-9, Nitrogen monoxide, processes
(oxidn. in desulfurization; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)
- IT 7446-09-5, Sulfur dioxide, processes
(removal from flue gases; flue gas desulfurization app. and method using carbon type porous material with means for supplying **nitrogen dioxide**)

L55 ANSWER 2 OF 28 HCA COPYRIGHT 2003 ACS on STN

136:181951 Effect of overexpression of Bcl-2 on cellular oxidative damage, nitric oxide

production, antioxidant defenses, and the proteasome. Lee, MoonHee;

Hyun, Dong-Hoon; Marshall, Karyn-Ann; Ellerby, Lisa M.; Bredesen, Dale E.; Jenner, Peter; Halliwell, Barry (Wolfson Centre for Age-Related Diseases, Guy's, King's and St. Thomas' School of Biomedical Sciences, King's College London, London, UK). Free Radical Biology & Medicine, 31(12), 1550-1559 (English) 2001. CODEN: FRBMEH. ISSN: 0891-5849. Publisher: Elsevier Science Inc..

AB

Bcl-2 is a gene family involved in the suppression of apoptosis in response to a wide range of cellular insults. Multiple papers have suggested a link between Bcl-2 and oxidative damage/antioxidant protection. The authors therefore examd. parameters of antioxidant defense and oxidative damage in two different cell lines, NT-2/D1 (NT-2) and SK-N-MC, overexpressing Bcl-2 as compared with vector-only controls. Bcl-2 transfectants of both cell lines were more resistant to H₂O₂ and showed increases in GSH level and Cu/Zn-superoxide dismutase (SOD1) activity, but not in Mn-superoxide dismutase, glutathione peroxidase, or glutathione reductase activities. Catalase activity was increased in SK-N-MC cells. Overexpression of Bcl-2 did not significantly decrease levels of oxidative DNA damage (measured as 8-hydroxyguanine) or lipid peroxidn., but it decreased levels of 3-nitrotyrosine in both cell lines and protein carbonyls in SK-N-MC cells only. It also increased proteasome activity in both cell lines. The authors conclude that Bcl-2 raises cellular antioxidant defense status, but this is not necessarily reflected in decreased levels of oxidative damage to DNA and lipids. The ability of Bcl-2 overexpression to decrease 3-nitrotyrosine levels suggests that it may decrease formation of peroxynitrite or other reactive nitrogen species; this was confirmed as decreased prodn. of NO₂-/NO₃- in the transfected cells and a fall in the level of nNOS protein.

IT

7722-84-1, Hydrogen peroxide, biological studies **10102-43-9, Nitric oxide**, biological studies (effect of overexpression of Bcl-2 on cellular **oxidative damage, nitric oxide** prodn., antioxidant defenses, and proteasome)

RN

7722-84-1 HCA

CN

Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

RN

10102-43-9 HCA

CN

Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

CC

14-15 (Mammalian Pathological Biochemistry)

Section cross-reference(s): 3, 13

ST

Bcl2 cellular **oxidative** damage **nitric oxide** prodn antioxidant proteasome

IT

Gene, animal
Proteins

- (Bcl-2; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Oxidation
(biol.; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Proteins
(carbonyl groups; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT DNA
(damage; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Animal cell line
Antioxidants
Apoptosis
Human
Transcription, genetic
(effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Reactive nitrogen species
(effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Peroxidation
(lipid; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Lipids, biological studies
(peroxidn.; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT Carbonyl group
(protein; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT 7727-37-9D, Nitrogen, reactive species
(Reactive nitrogen species; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT 9054-89-1, Superoxide dismutase
(copper-zinc- and manganese-contg. isoenzymes; effect of overexpression of Bcl-2 on cellular **oxidative** damage, **nitric oxide** prodn., antioxidant defenses, and proteasome)
- IT 621-44-3, 3-Nitro-L-tyrosine 5614-64-2, 8-Hydroxyguanine
7722-84-1, Hydrogen peroxide, biological studies 10102-43-9, Nitric oxide, biological studies
14797-55-8, Nitrate, biological studies 14797-65-0, Nitrite,

biological studies 19059-14-4, Peroxynitrite 140879-24-9,
Multicatalytic proteinase
(effect of overexpression of Bcl-2 on cellular **oxidative**
damage, **nitric oxide** prodn., antioxidant
defenses, and proteasome)

IT 70-18-8, Reduced glutathione, biological studies 9001-05-2,
Catalase 9001-48-3, Glutathione reductase 9013-66-5, Glutathione
peroxidase
(effect of overexpression of Bcl-2 on cellular **oxidative**
damage, **nitric oxide** prodn., antioxidant
defenses, and proteasome)

L55 ANSWER 3 OF 28 HCA COPYRIGHT 2003 ACS on STN

135:331301 Innovation of hydrocarbon oxidation with molecular oxygen and
related reactions. Ishii, Yasutaka; Sakaguchi, Satoshi; Iwahama,
Takahiro (Department of Applied Chemistry, Faculty of Engineering
and High Technology Research Center, Kansai University, Suita,
Osaka, 564-8680, Japan). Advanced Synthesis & Catalysis, 343(5),
393-427 (English) 2001. CODEN: ASCAF7. ISSN: 1615-4150.
Publisher: Wiley-VCH Verlag GmbH.

AB A review with refs. An innovation of the aerobic oxidn. of
hydrocarbons through catalytic carbon radical generation under mild
conditions was achieved by using N-hydroxyphthalimide (NHPI) as a
key compd. Alkanes were successfully oxidized with O or air to
valuable oxygen-contg. compds. such as alcs., ketones, and
dicarboxylic acids by the combined catalytic system of NHPI and a
transition metal such as Co or Mn. The NHPI-catalyzed oxidn. of
alkylbenzenes with dioxygen could be performed even under normal
temp. and pressure of dioxygen. Xylenes and methylpyridines were
also converted into phthalic acids and pyridinecarboxylic acids,
resp., in good yields. The present oxidn. method was extended to
the selective transformations of alcs. to carbonyl compds. and of
alkynes to ynones. The epoxidn. of alkenes using hydroperoxides or
H2O2 generated in situ from hydrocarbons or alcs. and O2
under the influence of the NHPI was demonstrated and seems to be a
useful strategy for industrial applications. The NHPI method is
applicable to a wide variety of org. syntheses via carbon radical
intermediates. The catalytic carboxylation of alkanes was
accomplished by the use of CO and O2 in the presence of NHPI. In
addn., the reactions of alkanes with NO, and SO2 catalyzed by NHPI
provided efficient methods for the synthesis of nitroalkanes and
sulfonic acids, resp. A catalytic carbon-carbon bond forming
reaction was achieved by allowing carbon radicals generated in situ
from alkanes or alcs. to react with alkenes under mild conditions.
A table of contents in this review includes: (1) Introduction: (2)
Discovery of NHPI as Carbon Radical Producing Catalyst from Alkanes:
(2.1) Historical Background: (2.2) Catalysis of NHPI in Aerobic
Oxidn.: (3) NHPI-Catalyzed Aerobic Oxidn.: (3.1) Oxidn. of Benzylic
Compds.: (3.2) Alkane Oxidns. with Mol. Oxygen: (3.3) Oxidn. of
Alkylbenzenes: (3.4) Practical Oxidn. of Methylpyridines: (3.5)
Prepn. of Acetylenic Ketones via Alkyne Oxidn.: (3.6) Oxidn. of
Alcs.: (3.7) Selective Oxidn. of Sulfides to Sulfoxides: (3.8)

Prod'n. of **Hydrogen Peroxide** by Aerobic Oxidn. of Alcs.: (3.9) Epoxidn. of Alkenes using Mol. Oxygen as Terminal Oxidant: (4) Carboxylation of Alkanes with CO and O₂: (5) Utilization of NO_x in Org. Synthesis: (5.1) First Catalytic Nitration of Alkanes using **NO₂**: (5.2) Reaction of **NO₂** with Org. Compds.: (6) Sulfoxidn. of Alkanes Catalyzed by Vanadium: (7) Carbon-Carbon Bond Forming Reaction via Catalytic Carbon Radicals Generated from Various Org. Compds. Assisted by NHPI: (7.1) Oxyalkylation of Alkenes with Alkanes and Dioxygen: (7.2) Synthesis of .alpha.-Hydroxy-.gamma.-lactones by Addn. of .alpha.-Hydroxy Carbon Radicals to Unsatd. Esters: (7.3) Hydroxyacylation of Alkenes using 1,3-Dioxolanes and Dioxygen: (8) Conclusions.

CC 27-0 (Heterocyclic Compounds (One Hetero Atom))

Section cross-reference(s): 23, 24, 25, 30

IT Nitration catalysts

(N-hydroxyphthalimide, for nitration of alkanes with **nitrogen dioxide**; innovation of hydrocarbon oxidn. with mol. oxygen and related reactions)

IT Bond cleavage

(oxidative, catalysts, N-hydroxyphthalimide, for benzyl ethers to benzaldehyde by **nitric oxide**; innovation of hydrocarbon oxidn. with mol. oxygen and related reactions)

L55 ANSWER 4 OF 28 HCA COPYRIGHT 2003 ACS on STN

133:325084 Process and apparatus for decomposition of halogen-containing organic compounds. Fujisawa, Masatoshi; Kato, Yasuyoshi (Babcock-Hitachi K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2000300959 A2 20001031, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-111064 19990419.

AB The title process comprises oxidn. of NO contained in waste gases contg. halo-contg. org. compds. by treating with **NO₂** or oxidizing agents, and catalytic oxidn. of the halo-contg. org. compd. by **NO₂** obtained above. The oxidizing agent may contain HNO₃, NH₄NO₃, O₃, and/or **H₂O₂**. The catalyst may contain TiO₂, V oxide, and oxide of Mo or W. The process is useful for decompn. of dioxins contained in incinerator flue gases.

IT 7722-84-1, **Hydrogen peroxide**, uses
(oxidizing agent; oxidn. of NO by **NO₂** or oxidizing agent before catalytic oxidn. of halo-contg. org. compd. for decompn. of dioxin contained in incinerator flue gas)

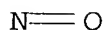
RN 7722-84-1 HCA

CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO- OH

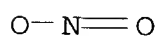
IT 10102-43-9, Nitrogen monoxide, uses
(oxidn. of NO by **NO₂** or oxidizing agent before catalytic oxidn. of halo-contg. org. compd. for decompn. of dioxin contained in incinerator flue gas)

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)



IT 10102-44-0, **Nitrogen dioxide**, uses
(oxidn. of NO by NO₂ or oxidizing agent before
catalytic oxidn. of halo-contg. org. compd. for decompn. of
dioxin contained in incinerator flue gas)

RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)



IC ICM B01D053-86
ICS B01D053-34; B01D053-70; B01D053-94; B01J023-28; B01J023-30
CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 67
IT Flue gases
(incinerator; oxidn. of NO by NO₂ or oxidizing agent
before catalytic oxidn. of halo-contg. org. compd. for decompn.
of dioxin contained in incinerator flue gas)
IT Oxidation catalysts
Oxidizing agents
(oxidn. of NO by NO₂ or oxidizing agent before
catalytic oxidn. of halo-contg. org. compd. for decompn. of
dioxin contained in incinerator flue gas)
IT 262-12-4D, Dibenzo[b,e][1,4]dioxin, chloro derivs.
(PCDD; oxidn. of NO by NO₂ or oxidizing agent before
catalytic oxidn. of halo-contg. org. compd. for decompn. of
dioxin contained in incinerator flue gas)
IT 1314-35-8, Tungsten oxide, uses 11098-99-0, Molybdenum oxide
11099-11-9, Vanadium oxide 13463-67-7, Titania, uses
(catalyst; oxidn. of NO by NO₂ or oxidizing agent
before catalytic oxidn. of halo-contg. org. compd. for decompn.
of dioxin contained in incinerator flue gas)
IT 6484-52-2, Ammonium nitrate, uses 7697-37-2, Nitric acid, uses
7722-84-1, Hydrogen peroxide, uses
10028-15-6, Ozone, uses
(oxidizing agent; oxidn. of NO by NO₂ or oxidizing
agent before catalytic oxidn. of halo-contg. org. compd. for
decompn. of dioxin contained in incinerator flue gas)
IT 10102-43-9, Nitrogen monoxide, uses
(oxidn. of NO by NO₂ or oxidizing agent
before catalytic oxidn. of halo-contg. org. compd. for decompn.
of dioxin contained in incinerator flue gas)
IT 10102-44-0, **Nitrogen dioxide**, uses
(oxidn. of NO by NO₂ or oxidizing agent before
catalytic oxidn. of halo-contg. org. compd. for decompn. of
dioxin contained in incinerator flue gas)

- IT 108-90-7, Chlorobenzene, processes 132-64-9D, Dibenzofuran, chloro derivs. 1746-01-6, TCDD
(oxidn. of NO by **NO2** or oxidizing agent before catalytic oxidn. of halo-contg. org. compd. for decompn. of dioxin contained in incinerator flue gas)
- L55 ANSWER 5 OF 28 HCA COPYRIGHT 2003 ACS on STN
132:77034 Nitrite- and Peroxide-Dependent Oxidation Pathways of Dopamine: 6-Nitrodopamine and 6-Hydroxydopamine Formation as Potential Contributory Mechanisms of **Oxidative Stress-** and **Nitric Oxide**-Induced Neurotoxicity in Neuronal Degeneration. Palumbo, Anna; Napolitano, Alessandra; Barone, Paolo; D'Ischia, Marco (Laboratory of Biochemistry, Zoological Station, Naples, I-80121, Italy). Chemical Research in Toxicology, 12(12), 1213-1222 (English) 1999. CODEN: CRTOEC. ISSN: 0893-228X. Publisher: American Chemical Society.
- AB In the presence of nitrite ions (**NO2-**) in phosphate buffer (pH 7.4) and at 37.degree., dopamine was oxidized by a variety of **hydrogen peroxide (H2O2)**-dependent enzymic and chem. systems to give, in addn. to black melanin-like pigments via 5,6-dihydroxyindoles, small amts. of the potent neurotoxin 6-hydroxydopamine (1) and of 6-nitrodopamine (2), a putative reaction product of dopamine with NO-derived species. Treatment of 0.5 or 1 mM dopamine with horseradish peroxidase (HRP) or lactoperoxidase (LPO) in the presence of 1 or 2 mM **H2O2** with **NO2-** at a concn. of 0.5-10 mM resulted in the formation of 1 and 2 in up to 8 and 2 .mu.M yields, resp., depending on the substrate concn. and the **NO2-:H2O2** ratio. Nitration and hydroxylation of 0.1 mM dopamine was obsd. with 1 mM **NO2-** using HRP and the D-glucose/glucose oxidase system to generate **H2O2** in situ. In the presence of **NO2--**, **Fe2+-**, or **Fe2+/EDTA**-promoted oxidns. of dopamine with **H2O2** also led to the formation of 1 and 2, the apparent product ratios varying with peroxide concn. and the partitioning of the metal between EDTA and catecholamine chelates. In the presence of **NO2-**, **Fe2+**-promoted autoxidn. of dopamine gave 2 but no detectable 1. When injected into the brains of lab. rats, 2 caused sporadic behavioral changes, indicating that it could elicit a neurotoxic response, albeit to a lower extent than 1. Model expts. using tyrosinase as an oxidizing system and mechanistic considerations suggested that formation of 2 does not involve reactive nitrogen radicals but results mainly from nucleophilic attack of **NO2-** to dopamine quinone. Generation of 1, on the other hand, may be derives from different **H2O2**-dependent pathways. Collectively, these results outline a complex interplay of **NO2--** and peroxide-dependent oxidn. pathways of dopamine, which may contribute to impair dopaminergic neurotransmission and induce cytotoxic processes in neurodegenerative disorders.
- IT 7722-84-1, **Hydrogen peroxide (H2O2)**, biological studies 10102-43-9, Nitric oxide, biological studies

(nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

CC 14-10 (Mammalian Pathological Biochemistry)

IT Nervous system

(degeneration; nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

IT Neurotransmission

(dopaminergic; nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

IT Toxicity

(neurotoxicity; nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

IT Oxidative stress, biological

(nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

IT Melanins

(nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

IT Nerve

(toxicity; nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative** stress-

- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)
- IT 7722-84-1, **Hydrogen peroxide** (**H2O2**), biological studies 10102-43-9, **Nitric oxide**, biological studies (nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative stress**- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)
- IT 1199-18-4, 6-Hydroxydopamine 21581-49-7, 6-Nitrodopamine (nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative stress**- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)
- IT 51-61-6, Dopamine, biological studies 14797-65-0, Nitrite ion, biological studies (nitrite- and peroxide-dependent oxidn. pathways of dopamine with 6-nitrodopamine and 6-hydroxydopamine formation as potential contributory mechanisms of **oxidative stress**- and **nitric oxide**-induced neurotoxicity in neuronal degeneration)

L55 ANSWER 6 OF 28 HCA COPYRIGHT 2003 ACS on STN

132:62518 Formation of nitric oxide-derived oxidants by myeloperoxidase in monocytes: pathways for monocyte-mediated protein nitration and lipid peroxidation in vivo. Hazen, Stanley L.; Zhang, Renliang; Shen, Zhongzhou; Wu, Weijia; Podrez, Eugene A.; MacPherson, Jennifer C.; Schmitt, David; Mitra, Shome N.; Mukhopadhyay, Chaitali; Chen, Yonghong; Cohen, Peter A.; Hoff, Henry F.; Abu-Soud, Husam M. (The Department of Cell Biology, the Department of Cardiology, Cleveland Clinic Foundation, Cleveland, OH, USA). Circulation Research, 85(10), 950-958 (English) 1999. CODEN: CIRUAL. ISSN: 0009-7330. Publisher: Lippincott Williams & Wilkins.

AB Protein nitration and lipid peroxidn. are implicated in the pathogenesis of atherosclerosis; however, neither the cellular mediators nor the reaction pathways for these events in vivo are established. In the present study, we examd. the chem. pathways available to monocytes for generating reactive nitrogen species and explored their potential contribution to the protein nitration and lipid peroxidn. of biol. targets. Isolated human monocytes activated in media contg. physiol. relevant levels of nitrite (**NO2-**), a major end product of nitric oxide (NO) metab., nitrate apolipoprotein B-100 tyrosine residues and initiate LDL lipid peroxidn. LDL nitration (assessed by gas chromatog.-mass spectrometry quantification of nitrotyrosine) and lipid peroxidn. (assessed by high-performance liq. chromatog. with online tandem mass spectrometric quantification of distinct products) required cell activation and **NO2-**; occurred in the presence of metal chelators, superoxide dismutase (SOD), and scavengers of hypohalous acids; and was blocked by myeloperoxidase (MPO)

inhibitors and catalase. Monocytes activated in the presence of the exogenous NO generator PAPA NONOate (Z-[N-{3-aminopropyl}-N-{n-propyl}amino]diazene-1-ium-1,2-diolate) promoted LDL protein nitration and lipid peroxidn. by a combination of pathways. At low rates of NO flux, both protein nitration and lipid peroxidn. were inhibited by catalase and peroxidase inhibitors but not SOD, suggesting a role for MPO. As rates of NO flux increased, both nitrotyrosine formation and 9-hydroxy-10,12-octadecadienoate/9-hydroperoxy-10,12-octadecadienoic acid prodn. by monocytes became insensitive to the presence of catalase or peroxidase inhibitors, but they were increasingly inhibited by SOD and methionine, suggesting a role for peroxynitrite. Collectively, these results demonstrate that monocytes use distinct mechanisms for generating NO-derived oxidants, and they identify MPO as a source of nitrating intermediates in monocytes.

- IT 10102-43-9, Nitric oxide, biological studies
 (derived oxidants; formation of nitric oxide-derived oxidants by myeloperoxidase in monocytes: pathways for monocyte-mediated protein nitration and lipid peroxidn. in vivo)
- RN 10102-43-9 HCA
- CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

- IT 7722-84-1, Hydrogen peroxide, biological studies
 (formation of nitric oxide-derived oxidants by myeloperoxidase in monocytes: pathways for monocyte-mediated protein nitration and lipid peroxidn. in vivo)
- RN 7722-84-1 HCA
- CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

- CC 14-5 (Mammalian Pathological Biochemistry)
- IT Atherosclerosis
 Oxidizing agents
 (formation of nitric oxide-derived oxidants by myeloperoxidase in monocytes: pathways for monocyte-mediated protein nitration and lipid peroxidn. in vivo)
- IT 10102-43-9, Nitric oxide, biological studies
 (derived oxidants; formation of nitric oxide-derived oxidants by myeloperoxidase in monocytes: pathways for monocyte-mediated protein nitration and lipid peroxidn. in vivo)
- IT 7722-84-1, Hydrogen peroxide, biological studies 19059-14-4, Peroxynitrite
 (formation of nitric oxide-derived oxidants by myeloperoxidase in monocytes: pathways for monocyte-mediated protein nitration and lipid peroxidn. in vivo)

L55 ANSWER 7 OF 28 HCA COPYRIGHT 2003 ACS on STN

131:161001 Oxidative drop or aerosol separator for waste gases or exhaust air streams. Gernhardt, Hans Dieter; Giersbach, Gerhard; Zimmermann, Klaus; Tauchnitz, Heiko; Vanselow, Heike; Kretzschmar, Kurt; Neubert, Jens; Eichhorst, Volker (Krupp VDM G.m.b.H., Germany). Ger. Offen. DE 19805444 A1 19990819, 6 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1998-19805444 19980211.

AB A separator with catalytically active surfaces is used for removal of drops or aerosols from gases with partial oxidn. of org. or inorg. contaminants, e.g., formaldehyde or NOx, in the gas or liq. streams. The gas stream is sprayed with oxidizing agents, e.g., aq. H2O2, before entering the separator section of the unit. The separator section comprises catalytic metal packing or nets with wt. 0.05-10 kg/L and 50% porosity.

IT 10102-43-9, Nitric oxide, processes
10102-44-0, Nitrogen dioxide, processes
(oxidative drop or aerosol separator for waste gases or exhaust air streams)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

IT 7722-84-1, Hydrogen peroxide, uses
(oxidizing agents; oxidative drop or aerosol separator for waste gases or exhaust air streams)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

$\text{HO}-\text{OH}$

IC ICM B01D045-10

ICS B01D053-86; B01D053-94

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 47, 67

IT 50-00-0, Formaldehyde, processes 10102-43-9,
Nitric oxide, processes 10102-44-0,
Nitrogen dioxide, processes 11104-93-1, Nitrogen
oxide, processes

(oxidative drop or aerosol separator for waste gases or exhaust air streams)

IT 563-69-9, Carbonoperoxoic acid 7722-84-1, Hydrogen
peroxide, uses

(oxidizing agents; oxidative drop or aerosol separator for waste

gases or exhaust air streams)

- L55 ANSWER 8 OF 28 HCA COPYRIGHT 2003 ACS on STN
129:249339 Regional-scale oxidant formation: analysis of rural and urban coupling. Lu, Cheng-Hsuan (State Univ. of New York, Albany, NY, USA). 153 pp. Avail. UMI, Order No. DA9830205 From: Diss. Abstr. Int., B 1998, 59(4), 1566 (English) 1998.
AB Unavailable
IT 7722-84-1, **Hydrogen peroxide**, reactions
10102-43-9, Nitric oxide, reactions 10102-44-0, **Nitrogen dioxide**, reactions
(modeling regional-scale oxidant formation by analyzing rural and urban environmental coupling)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

- RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

- CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 53
ST ozone formation photochem air pollution; urban rural environmental coupling photochem pollution; modeling urban rural environmental coupling; odd hydrogen cycling photochem air pollution;
nitric oxide oxidn nitrogen dioxide pollution; aldehyde isoprene interaction air pollution
IT 50-00-0, Formaldehyde, reactions 78-79-5, Isoprene, reactions 7697-37-2, Nitric acid, reactions 7722-84-1, **Hydrogen peroxide**, reactions 7727-37-9D, Nitrogen, oxygen-contg., reactions 10102-43-9, Nitric oxide, reactions 10102-44-0, **Nitrogen dioxide**, reactions
(modeling regional-scale oxidant formation by analyzing rural and urban environmental coupling)

- L55 ANSWER 9 OF 28 HCA COPYRIGHT 2003 ACS on STN
127:282532 Oxidative stress response and photosystem 2 efficiency in trees of urban areas. Rank, B. (Institute of Biology, Humboldt-University Berlin, Berlin, D-10099, Germany).

Photosynthetica, 33(3-4), 467-481 (English) 1997. CODEN: PHSYB5.
ISSN: 0300-3604. Publisher: Institute of Experimental Botany,
Academy of Sciences of the Czech Republic.

AB The neophyte *Ailanthus altissima* (Tree of Heaven), 1751 introduced from China to England, is propagating in some urban areas very successfully in spite of the increasing air pollution, whereas many traditional urban trees decline. It was examd., whether this rapid spread might be supported by a high capacity of antioxidative protection. In comparison to *Betula*, *Tilia* and *Platanus*, the leaves of *Ailanthus* had the lowest content of thiobarbiturate-reactive substances (TBA-rs) and the highest activity of ascorbate-specific peroxidase (AS-POD). This indicated a lower level of oxidative lipid breakdown and a higher capacity for detoxification of **H2O2** in leaves of *Ailanthus* than in the other three species. Further on, the quantum yield of photosystem (PS) 2, $\Delta F/F_m'$, was quantified by means of fluorimetric anal. Whereas no differences were found between *Ailanthus*, *Betula* and *Platanus*, the leaves of *Tilia* had a relative lower efficiency in PS2 photochem. The air analyses done by the Senat von Berlin were used to examine the influence of actual concns. of air pollutants O3, SO2 and NOx on the leaves of investigated trees. Only the leaves of *Ailanthus* might react on air pollution in different habitats by elevating the activity of AS-POD under high pollution, but in a very limited way. The quantum yield of PS2 and the amt. of TBA-rs in the leaves were not influenced by the concn. of air pollutants. Differences between individual trees within species can be due to the genotype or to edaphic factors, but not to the level of air pollution of the habitat. Therefore improvement of cultivation, fertilization, aeration of the soil and other measures should be helpful for the survival of urban trees even under strong immission conditions.

IT 10102-43-9, Nitric oxide, biological
studies 10102-44-0, Nitrogen dioxide,
biological studies
(oxidative stress response and photosystem 2 efficiency
in trees of urban areas)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$N=O$

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

$O-N=O$

CC 59-2 (Air Pollution and Industrial Hygiene)

IT 7446-09-5, Sulfur dioxide, biological studies 10028-15-6, Ozone,
biological studies 10102-43-9, Nitric
oxide, biological studies 10102-44-0,
Nitrogen dioxide, biological studies 11104-93-1,

Nitrogen oxide, biological studies
(oxidative stress response and photosystem 2 efficiency
in trees of urban areas)

L55 ANSWER 10 OF 28 HCA COPYRIGHT 2003 ACS on STN

127:15075 Dichlorodihydrofluorescein and dihydrorhodamine 123 are sensitive indicators of peroxynitrite in vitro: implications for intracellular measurement of reactive nitrogen and oxygen species. Crow, John P. (Department of Anesthesiology, University of Alabama at Birmingham, AL, 35233, USA). Nitric Oxide, 1(2), 145-157 (English) 1997. CODEN: NIOXF5. ISSN: 1089-8603. Publisher: Academic.

AB 2,7-Dichlorodihydrofluorescein (DCDHF), commonly known as dichlorofluorescein, and dihydrorhodamine 123 (DHR) are often used to detect the prodn. of reactive nitrogen and oxygen species in cells via oxidn. to their resp. fluorescent products. To det. which biol. oxidants might be involved, DCDHF and DHR were exposed to a no. of oxidants in vitro to det. which are capable of oxidizing these compds. Formation of dichlorofluorescein (DCF) and rhodamine is typically monitored by measuring their intrinsic fluorescence, however, absorbance can also be utilized ($\epsilon_{500\text{ nm}} = 59,500$ and $78,800\text{ M}^{-1}\text{ cm}^{-1}$ for DCF and rhodamine, resp.). Peroxynitrite (ONOO-) readily oxidized both compds. with an efficiency equal to 38% of added ONOO- for DCDHF and 44% for DHR. Addn. of nitric oxide (NO) to a superoxide-generating system resulted in DCDHF and DHR oxidn. which was inhibitable by superoxide dismutase (SOD). SIN-1-mediated oxidn. of DCDHF and DHR was also SOD-inhibitable, suggesting that peroxynitrite is the primary oxidant formed from SIN-1 decompn. Aerobic addn. of NO resulted in DCDHF oxidn. in a manner consistent with **nitrogen dioxide** (NO_2) formation. NO did not oxidize DHR and actually inhibited UV-light-induced DHR oxidn. Simultaneous addn. of NO and ONOO- resulted in an apparent inhibition of indicator oxidn.; however, subsequent addn. of ONOO- alone 20 s later produced a higher than av. amt. of oxidized indicator. Addn. of indicator after NO + ONOO- followed by subsequent ONOO- addn. gave similar results, suggesting the formation of a relatively stable, oxidant-activated NO/ONOO- adduct. At pH 7.4, hypochlorous acid was 66% efficient at oxidizing DHR but only 9% with DCDHF. Neither **H2O2** (1 mM) nor superoxide flux alone produced significant indicator oxidn. Oxidn. of DCDHF by horseradish peroxidase (HRP) plus **H2O2** was considerably less efficient than oxidn. of DHR. At 20-fold higher concns., HRP alone oxidized DHR but the rate was much lower than when **H2O2** was present. Catalase largely inhibited HRP-mediated oxidn. of DHR but not DCDHF, suggesting a direct effect of the peroxidase on DCDHF. These results reveal that peroxynitrite, hypochlorous acid, and **H2O2** plus peroxidase all oxidize DCDHF and DHR to varying degrees but that neither superoxide, **H2O2** alone, nor physiol. levels of nitric oxide are capable of indicator oxidn. Thus, DCDHF or DHR oxidn. in any given cell type may involve more than one oxidant. In cell systems where **nitric**

oxide prodn. occurs, oxidn. of either DCDHF or DHR is likely to include a peroxyxynitrite component. Identification of relevant oxidants will best be achieved with a combined exptl. approach which exploits the differential reactivities of DCDHF and DHR and the judicious use of inhibitors and oxidant scavengers.

IT 7722-84-1, **Hydrogen peroxide**, analysis
10102-43-9, Nitric oxide, analysis 10102-44-0, **Nitrogen dioxide**, analysis
(dichlorodihydrofluorescein and dihydrorhodamine 123 are sensitive indicators of reactive nitrogen and oxygen species)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

O-N=O

CC 9-15 (Biochemical Methods)
Section cross-reference(s): 6, 79
IT 7722-84-1, **Hydrogen peroxide**, analysis
7790-92-3, Hypochlorous acid 10102-43-9, Nitric oxide, analysis 10102-44-0, **Nitrogen dioxide**, analysis 11062-77-4, Superoxide 19059-14-4, Peroxyxynitrite 33876-97-0, SIN-1
(dichlorodihydrofluorescein and dihydrorhodamine 123 are sensitive indicators of reactive nitrogen and oxygen species)

L55 ANSWER 11 OF 28 HCA COPYRIGHT 2003 ACS on STN
126:242120 Hydrothermal Oxidation of Organic Wastes Using Ammonium Nitrate. Proesmans, Petra I.; Luan, Li; Buelow, Steven J. (Chemical Science and Technology Division, Los Alamos National Laboratory, Los Alamos, NM, 87545, USA). Industrial & Engineering Chemistry Research, 36(5), 1559-1566 (English) 1997. CODEN: IECRED. ISSN: 0888-5885. Publisher: American Chemical Society.
AB The use of ammonium nitrate as an oxidizing agent in hydrothermal oxidn. of org. compds. was studied. The oxidn. of model compds., methanol, acetic acid, and phenol, was studied at 500.degree. and 345 bar. High org., ammonia, and nitrate removal was achieved at stoichiometric concns. The oxidn. of ammonia by nitrate was much faster than the oxidn. of either methanol or acetic acid and only slightly faster than phenol. N products included N, N2O, and

NO₂- as well as toxic NO and trace amts. of **NO₂**.
C products were CO₂, HCO₃⁻, CO₃²⁻, and CO. The co-oxidant system with **H₂O₂** and ammonium nitrate was studied to eliminate the NO_x prodn. Stoichiometric concns. of **H₂O₂** to the C concns. resulted in undetectable NO_x levels.

IT **10102-43-9, Nitric oxide**, formation
(nonpreparative) **10102-44-0, Nitrogen dioxide**, formation (nonpreparative)
(hydrothermal oxidn. of org. wastes using ammonium nitrate)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA

CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

IT **7722-84-1, Hydrogen peroxide**, uses
(hydrothermal oxidn. of org. wastes using ammonium nitrate)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

CC 60-2 (Waste Treatment and Disposal)

IT 630-08-0, Carbon monoxide, formation (nonpreparative) 10024-97-2,
Nitrous oxide, formation (nonpreparative) **10102-43-9, Nitric oxide**, formation (nonpreparative)
10102-44-0, Nitrogen dioxide, formation (nonpreparative) 11104-93-1, Nitrogen oxide, formation (nonpreparative)
(hydrothermal oxidn. of org. wastes using ammonium nitrate)

IT **7722-84-1, Hydrogen peroxide**, uses
(hydrothermal oxidn. of org. wastes using ammonium nitrate)

L55 ANSWER 12 OF 28 HCA COPYRIGHT 2003 ACS on STN

126:241973 Oxidation of NO to **NO₂** by **hydrogen peroxide** and its mixtures with methanol in natural gas and coal combustion gases. Zamansky, Vladimir M.; Ho, Loc; Maly, Peter M.; Seeker, W. Randall (Energy Environmental Research Corporation, Irvine, CA, 92618, USA). Combustion Science and Technology, 120(1-6), 255-272 (English) 1996. CODEN: CBSTB9. ISSN: 0010-2202. Publisher: Gordon & Breach.

AB The CombiNO_x process includes a family of NO_x control technologies (reburning, urea injection, MeOH injection, and wet scrubbing)

capable of reducing NO_x from stationary combustion sources by .apprx.90%. However, MeOH forms CO in flue gas as a byproduct. **H2O2** and **H2O2/MeOH** mixts. decrease the amt. of CO.

Exptl. and modeling results on **H2O2** and **H2O2/MeOH** reactions with NO in a 300-kW combustor firing natural gas and coal are presented. Max. NO oxidn. was achieved at 750-820 K for injection of **H2O2**, and 1:1 **H2O2/MeOH** mixt., and at 850-930 K for MeOH injection. NO-to-**NO2** conversion of 90-98 and 64-76% was achieved at an additive NO molar ratio of 1.5 during natural gas and coal firing, resp. Influence of initial NO concns., the additive/NO ratio, O and SO₂ concns., and the presence of fly ash on process performance is discussed. Exptl. results are qual. explained by kinetic modeling.

IT 10102-43-9, Nitrogen monoxide, reactions
 (oxidn. of nitric oxide by
 hydrogen peroxide and methanol in natural gas
 and coal combustion gases)
 RN 10102-43-9 HCA
 CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

IT 7722-84-1, Hydrogen peroxide, reactions
 (oxidn. of nitric oxide by
 hydrogen peroxide and methanol in natural gas
 and coal combustion gases)
 RN 7722-84-1 HCA
 CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

CC 59-4 (Air Pollution and Industrial Hygiene)
 Section cross-reference(s): 51
 ST coal flue gas nitrogen oxide oxidn; **hydrogen peroxide** methanol oxidn nitrogen oxide; firing flue gas nitrogen oxide oxidn
 IT Ashes (residues)
 Ashes (residues)
 (coal fly; oxidn. of nitric oxide
 by **hydrogen peroxide** and methanol in natural gas and coal combustion gases)
 IT Flue gases
 (coal, natural gas; oxidn. of nitric
 oxide by **hydrogen peroxide** and
 methanol in natural gas and coal combustion gases)
 IT Oxidation kinetics
 Simulation and Modeling, physicochemical
 (oxidn. of nitric oxide by
hydrogen peroxide and methanol in natural gas
 and coal combustion gases)

- IT 10102-43-9, Nitrogen monoxide, reactions
(oxidn. of **nitric oxide** by
hydrogen peroxide and methanol in natural gas
and coal combustion gases)
- IT 67-56-1, Methanol, reactions 7446-09-5, Sulfur dioxide, reactions
7722-84-1, Hydrogen peroxide, reactions
7782-44-7, Oxygen, reactions
(oxidn. of **nitric oxide** by
hydrogen peroxide and methanol in natural gas
and coal combustion gases)

L55 ANSWER 13 OF 28 HCA COPYRIGHT 2003 ACS on STN

124:76024 **Oxidative release of nitric oxide**

accounts for guanylyl cyclase stimulating, vasodilator and anti-platelet activity of Piloty's acid: a comparison with Angeli's salt. Zamora, Ruben; Grzesiok, Andreas; Weber, Horst; Feelisch, Martin (Dep. Nitric Oxide Research, Schwarz Pharma AG, Monheim, D-40789, Germany). Biochemical Journal, 312(2), 333-9 (English) 1995. CODEN: BIJOAK. ISSN: 0264-6021. Publisher: Portland Press.

- AB The decompn. of benzenesulfohydroxamic acid (Piloty's acid; PA) and some of its derivs. has been reported to yield nitroxyl ions (NO⁻), a species with potent vasodilator properties. In a previous study we demonstrated that the oxidative breakdown of PA results in the formation of nitric oxide (NO) and suggested that NO rather than NO⁻ may account for its vasorelaxant properties. Using isolated aortic rings in organ baths, we now show that high concns. of cysteine potentiate the vasorelaxant response to PA, whereas responses to Angeli's salt (AS), a known generator of NO⁻, were almost completely inhibited. These different behaviors of PA and AS are mirrored by their distinct chemistries. By using HPLC it was shown that, at physiol. pH and in the absence of oxidizing conditions, PA is a relatively stable compd. Direct chem. detn. of NO, stimulation of sol. guanylyl cyclase, and measurement of platelet aggregation under various exptl. conditions confirmed the requirement for oxidn. to release NO from PA, and quite weak oxidants were found to be sufficient to promote this reaction. In contrast, at pH 7.4 AS decompd. rapidly to yield nitrite (NO₂⁻) and NO⁻, but did not produce NO on reaction with dioxygen (O₂) or **hydrogen peroxide** (H₂O₂). Thus sulfohydroxamic acids are a new class of thiol-independent NO-donors that generate NO rather than NO⁻ under physiol. conditions.

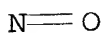
- IT 10102-43-9, **Nitric oxide**, biological studies

(**oxidative release of nitric oxide**

accounts for guanylyl cyclase stimulating, vasodilator and anti-platelet activity of Piloty's acid: a comparison with Angeli's salt)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)



CC 1-8 (Pharmacology)
IT Blood platelet
Blood vessel
(oxidative release of **nitric oxide**
accounts for guanylyl cyclase stimulating, vasodilator and
anti-platelet activity of Piloty's acid: a comparison with
Angeli's salt)
IT 599-71-3, Piloty's acid 13826-64-7, Angeli's salt
(oxidative release of **nitric oxide**
accounts for guanylyl cyclase stimulating, vasodilator and
anti-platelet activity of Piloty's acid: a comparison with
Angeli's salt)
IT 10102-43-9, **Nitric oxide**, biological
studies
(oxidative release of **nitric oxide**
accounts for guanylyl cyclase stimulating, vasodilator and
anti-platelet activity of Piloty's acid: a comparison with
Angeli's salt)

L55 ANSWER 14 OF 28 HCA COPYRIGHT 2003 ACS on STN
117:38453 Silicon wafer oxidation. Iwamatsu, Seiichi (Seiko Epson K.
K., Japan). Jpn. Kokai Tokkyo Koho JP 04075354 A2 19920310 Heisei,
2 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-188711
19900717.
AB A SiO₂ film is manufd. by exposing Si in a gas atm. of NO₂
, NO, N₂O, SO₃, H₂O₂, etc.
IT 7722-84-1, **Hydrogen peroxide**, reactions
10102-43-9, Nitrogen monoxide, reactions 10102-44-0
, **Nitrogen dioxide**, reactions
(oxidn. of silicon wafer with)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IC ICM H01L021-469
CC 76-3 (Electric Phenomena)
IT 7446-11-9, Sulfur trioxide, reactions 7722-84-1,

Hydrogen peroxide, reactions 10024-97-2,
Dinitrogen oxide, reactions 10102-43-9, **Nitrogen**
monooxide, reactions 10102-44-0, **Nitrogen**
dioxide, reactions
(**oxidn.** of silicon wafer with)

- L55 ANSWER 15 OF 28 HCA COPYRIGHT 2003 ACS on STN
117:3284 Formation of nitrogen oxides and citrulline upon oxidation of
N.omega.-hydroxy-L-arginine by heme proteins. Boucher, J. L.;
Genet, A.; Vadon, S.; Delaforge, M.; Mansuy, D. (Lab. Chim. Biochim.
Pharmacol. Toxicol., Univ. Rene Descartes, Paris, 75270, Fr.).
Biochemical and Biophysical Research Communications, 184(3), 1158-64
(English) 1992. CODEN: BBRCA9. ISSN: 0006-291X.
- AB Horseradish peroxidase (HRP) catalyzes the oxidn. of
N.omega.-hydroxy-L-arginine (NOHA) by **H2O2** with formation
of citrulline and **NO2-** with initial rates of about 0.7 and
0.2 nmol per nmol HRP per min. In the same manner, cytochromes P
450 from rat liver microsomes catalyze the oxidn. of NOHA to
citrulline and **NO2-** by cumylhydroperoxide. Inhibitors of
these heme proteins (N3- and CN-'for HRP and miconazole for P 450)
strongly inhibit both citrulline and **NO2-** formation.
Rates of NOHA oxidn. by these heme proteins markedly decrease with
time presumably because of their denaturation by nitrogen oxides and
the formation of heme protein-iron-NO complexes. These results
suggest that NO (and other nitrogen oxides) could be formed from
oxidn. of NOHA by enzymes other than NO-synthases.
- IT 10102-43-9, Nitric oxide, biological studies
(formation of, by oxidn. of hydroxyarginine by peroxides
catalyzed by cytochrome P 450 and horseradish peroxidase and
other hemoproteins)
- RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- IT 7722-84-1, **Hydrogen peroxide**, biological
studies
(**nitric oxide** formation from hydroxyarginine
oxidn. by horseradish peroxidase and other heme proteins
in presence of)
- RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

- CC 7-6 (Enzymes)
Section cross-reference(s): 6, 13
- IT 372-75-8, Citrulline 10102-43-9, Nitric oxide, biological
studies 14797-65-0, Nitrite, biological studies
(formation of, by oxidn. of hydroxyarginine by peroxides)

- catalyzed by cytochrome P 450 and horseradish peroxidase and other hemoproteins)
- IT 80-15-9, Cumyl hydroperoxide
(**nitric oxide** formation from hydroxyarginine oxidn. by cytochrome P 450 in presence of)
- IT 7722-84-1, **Hydrogen peroxide**, biological studies
(**nitric oxide** formation from hydroxyarginine oxidn. by horseradish peroxidase and other heme proteins in presence of)
- L55 ANSWER 16 OF 28 HCA COPYRIGHT 2003 ACS on STN
- 114:158798 Peroxynitrite oxidation of sulfhydryls. The cytotoxic potential of superoxide and nitric oxide. Radi, Rafael; Beckman, Joseph S.; Bush, Kenneth M.; Freeman, Bruce A. (Dep. Anesthesiol., Univ. Alabama, Birmingham, AL, 35233, USA). Journal of Biological Chemistry, 266(7), 4244-50 (English) 1991. CODEN: JBCHA3. ISSN: 0021-9258.
- AB Peroxynitrite anion (ONOO-) is a potent oxidant that mediates oxidn. of both nonprotein and protein sulfhydryls. Endothelial cells, macrophages, and neutrophils can generate superoxide as well as nitric oxide, leading to the prodn. of peroxynitrite anion in vivo. Apparent second order rate consts. were 5900 M-1.s-1 and 2600-2800 M-1.s-1 for the reaction of peroxynitrite anion with free cysteine and the single thiol of albumin, resp., at pH 7.4 and 37.degree.. These rate consts. are 3 orders of magnitude greater than the corresponding rate consts. for the reaction of **hydrogen peroxide** with sulfhydryls at pH 7.4. Unlike H2O2, which oxidizes thiolate anion, peroxynitrite anion reacts preferentially with the undissociated form of the thiol group. Peroxynitrite oxidizes cysteine to cystine and the bovine serum albumin thiol group to an arsenite nonreducible product, suggesting oxidn. beyond sulfenic acid. Peroxynitrous acid was a less effective thiol-oxidizing agent than its anion, with oxidn. presumably mediated by the decompn. products, hydroxyl radical and **nitrogen dioxide**. The reactive peroxynitrite anion may exert cytotoxic effects in part by oxidizing tissue sulfhydryls.
- IT 10102-43-9, Nitrogen oxide (NO), biological studies
(peroxynitrite anion generation by, sulfhydryl oxidn. by, **hydrogen peroxide**-mediated oxidn. in comparison with)
- RN 10102-43-9 HCA
- CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- IT 7722-84-1, **Hydrogen peroxide**, biological studies
(sulfhydryl oxidn. by, **nitric oxide**
- and superoxide-generated peroxynitrite anion oxidn. in

comparison with)

RN 7722-84-1 HCA

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

CC 4-3 (Toxicology)

ST peroxynitrite oxidn sulfhydryl; superoxide **nitric oxide** peroxynitrite **oxidn** sulfhydryl

IT Mercapto group

(nitric oxide- and superoxide-generated peroxynitrite anion oxidn. of, **hydrogen peroxide**-mediated oxidn. in comparison with)

IT Albumins, reactions

(nitric oxide- and superoxide-generated peroxynitrite oxidn. of sulfhydryl group in, **hydrogen peroxide**-mediated oxidn. in comparison with)

IT Kinetics of **oxidation**

(of sulfhydryl, by **nitric oxide**- and superoxide-generated peroxynitrite anion, **hydrogen peroxide**-mediated oxidn. in comparison with)

IT 19059-14-4, Peroxynitrite

(nitric oxide and superoxide generation of, sulfhydryl oxidn. by, **hydrogen peroxide**-mediated oxidn. in comparison with)

IT 52-90-4, Cysteine, biological studies

(oxidn. of, by **nitric oxide**- and superoxide-generated peroxynitrite anion, **hydrogen peroxide**-mediated oxidn. in comparison with)

IT 10102-43-9, Nitrogen oxide (NO), biological studies

11062-77-4, Superoxide

(peroxynitrite anion generation by, sulfhydryl oxidn. by, **hydrogen peroxide**-mediated oxidn. in comparison with)

IT 7722-84-1, **Hydrogen peroxide**, biological studies

(sulfhydryl oxidn. by, **nitric oxide** - and superoxide-generated peroxynitrite anion oxidn. in comparison with)

L55 ANSWER 17 OF 28 HCA COPYRIGHT 2003 ACS on STN

97:187419 Behavior of methanol and formaldehyde in waste gases from methanol combustion. Effects of **nitric oxide** on the **oxidation** reaction. Yano, Toshiaki; Ito, Kenichi (Coll. Eng., Hokkaido Univ., Sapporo, Japan). Nippon Kikai Gakkai Ronbunshu, B-hen, 48(431), 1392-401 (Japanese) 1982. CODEN: NKGBDD. ISSN: 0387-5016.

AB The effect of air fuel ratio, ϕ = 0.8 - 1.4, and the NO in the exhaust gas on the uncombusted MeOH and CH₂O in the exhaust gas from a MeOH-burning engine were studied. The oxidn. of MeOH was fast at 1.0 - 1.2 ϕ when NO concn. and O concn. are both

high. CH₂O formation was the greatest at 1.4 .vphi.AF, when the O concn. is high, and the lowest at 0.8 .vphi.AF, when NO is low.

IT 7722-84-1, uses and miscellaneous 10102-43-9, uses
and miscellaneous 10102-44-0, uses and miscellaneous
(in exhaust gas from methanol-burning engines, nitric oxide in
relation to)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

O-N=O

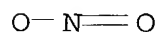
CC 59-3 (Air Pollution and Industrial Hygiene)
IT 50-00-0, occurrence 67-56-1, occurrence 74-82-8, occurrence
124-38-9, occurrence 630-08-0, occurrence 1333-74-0, occurrence
2229-07-4 2465-56-7 2597-43-5 2597-44-6 3170-83-0
3315-37-5 3352-57-6, occurrence 7722-84-1, uses and
miscellaneous 7727-37-9, analysis 7782-44-7, occurrence
7782-77-6 10024-97-2, analysis 10102-43-9, uses and
miscellaneous 10102-44-0, uses and miscellaneous
(in exhaust gas from methanol-burning engines, nitric oxide in
relation to)

L55 ANSWER 18 OF 28 HCA COPYRIGHT 2003 ACS on STN

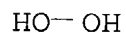
97:97550 Oxidation of nitric oxide to
nitrogen dioxide in the flue gas. II. Oxidation
by addition of hydrogen gas, hydrogen peroxide,
formaldehyde, methane. Murakami, Nobuaki; Izumi, Jun; Shirakawa,
Seiichi (Nagasaki Inst., Mitsubishi Heavy Ind., Ltd., Nagasaki,
Japan). Nenryo Kyokaishi, 61(661), 329-37 (Japanese) 1982. CODEN:
NENKAU. ISSN: 0369-3775.

AB The reaction characteristics of O₂-NO-H₂, H₂O₂, HCHO
[50-00-0], and CH₄ [74-82-8] systems were investigated at
400-1200.degree.. In the case of H₂O₂ and HCHO, oxidn. of
NO to NO₂ occurred at [M]/[NO].apprxeq.1, but in the case
of H₂ and CH₄, a higher value of [M]/[NO] was needed, where [M]/[NO]
is molar ratio of added chems. to NO. The importance of HO₂
radicals in oxidn. of NO to NO₂ was recognized from the
kinetic model calcn. including 22 species and 70 elementary
reactions.

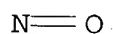
IT 10102-44-0P, preparation
(formation of, from **nitric oxide**
oxidn. in flue gas)
RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)



IT 7722-84-1, reactions
(**oxidn.** of **nitric oxide** in flue gas
by)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)



IT 10102-43-9, reactions
(**oxidn.** of, to **nitrogen dioxide**, in
flue gas)
RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)



CC 59-4 (Air Pollution and Industrial Hygiene)
ST **nitric oxide oxidn** flue gas;
hydrogen peroxide oxidn **nitric**
oxide; formaldehyde **oxidn** **nitric**
oxide; methane **oxidn** **nitric**
oxide
IT Flue gases
(**nitric oxide oxidn.** in, to
nitrogen dioxide)
IT Kinetics of **oxidation**
(of **nitric oxide**, in flue gas)
IT Kinetics, reaction
(of **nitric oxide**, **oxidn.**, in flue
gas)
IT 10102-44-0P, preparation
(formation of, from **nitric oxide**
oxidn. in flue gas)
IT 50-00-0, reactions 74-82-8, reactions 1333-74-0, reactions
7722-84-1, reactions
(**oxidn.** of **nitric oxide** in flue gas
by)
IT 10102-43-9, reactions
(**oxidn.** of, to **nitrogen dioxide**, in
flue gas)

- L55 ANSWER 19 OF 28 HCA COPYRIGHT 2003 ACS on STN
96:204728 Noncatalytic reduction of nitrogen oxides. (Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 57012819 A2 19820122 Showa, 2 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1980-87406 19800627.
- AB NOx is removed from flue gases by a noncatalytic oxidn.-redn. process in which .gtoreq.1 of O-contg. compds. and their precursors and(or) **H2O2** are used as oxidants and NH3 is used as a reducing agent. Thus, flue gas contg. 103 ppm NO and 10 vol.% O was treated at 500-600.degree. with 105 ppm **H2O2** and 212 ppm NH3 to give a gas contg. .apprx.10 ppm NOx. The temp. range is lower than the 800-1000.degree. required by direct redn. with NH3. The use of MeOH [67-56-1] as the oxidant in the process yielded a similar result.
- IT 7722-84-1, reactions
(oxidn. by, of **nitric oxide**, prior to redn. with ammonia, in flue gas denitration)
- RN 7722-84-1 HCA
- CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)
- HO-OH
- IC B01D053-34
- CC 59-4 (Air Pollution and Industrial Hygiene)
- ST nitrogen oxide removal flue gas; noncatalytic flue gas denitration; **hydrogen peroxide** flue gas denitration; methanol flue gas denitration; ammonia flue gas denitration
- IT 67-56-1, reactions
(oxidn. by, of **nitric oxide** oxidn. by, prior to redn. with ammonia, in flue gas denitration)
- IT 7722-84-1, reactions
(oxidn. by, of **nitric oxide**, prior to redn. with ammonia, in flue gas denitration)
- IT 7664-41-7, reactions
(redn. by, of **nitrogen dioxide**, after **nitric oxide oxidn.**, in flue gas denitration)
- IT 11104-93-1, uses and miscellaneous
(removal of, from flue gas, by noncatalytic oxidn.-redn., with **hydrogen peroxide** or methanol and ammonia)
- L55 ANSWER 20 OF 28 HCA COPYRIGHT 2003 ACS on STN
96:148294 Monitoring of nitrogen oxides. (Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Tokkyo Koho JP 56048059 B4 19811113 Showa, 4 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1975-145751 19751205.
- AB The NOx(i.e., NO and **NO2**) concn. in flue gas is monitored by a process in which the NO is oxidized with **H2O2** to **NO2** for the spectrophotometric anal. in the visible-UV range. Thus, 120 ppm NO and 6 ppm **NO2** in a heavy oil-fired boiler flue gas were detd. by using 2 equiv of

H2O2 at 350.degree. reaction temp.
IT 7722-84-1, reactions
(oxidn. by, of **nitric oxides**, in
monitoring of nitrogen oxide in flue gas, by UV
spectrophotometry)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

IC G01N021-25
CC 59-1 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79
IT Flue gases
(nitrogen oxide monitoring in, by oxidn. and UV spectrophotometry
of **nitrogen dioxide**)
IT 11104-93-1, analysis
(detn. of, in boiler flue gas, by oxidn. and UV spectrophotometry
of **nitrogen dioxide**)
IT 7722-84-1, reactions
(oxidn. by, of **nitric oxides**, in
monitoring of nitrogen oxide in flue gas, by UV
spectrophotometry)

L55 ANSWER 21 OF 28 HCA COPYRIGHT 2003 ACS on STN
95:208862 Sampling of nitrogen oxide-containing gas. (Kawasaki Steel
Corp., Japan). Jpn. Tokkyo Koho JP 56026820 B4 19810620 Showa, 3
pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1977-13369
19770209.

AB NOx in flue gas is simultaneously sorbed and oxidized (NO to
NO2) in a gas-sampling system designed to improve the
accuracy of NOx concn. detn. and to shorten the time spent in the
detn. A flask contg. aq. sorbent (contg., e.g., 0.3% H2O2
and 0.3% H2SO4) is vacuumed until the sorbent is vaporized.
Predetd. amts. of O3 and the flue gas are fed in sequence to mix
with the vapor in the flask. The resulting mixt. is analyzed by a
conventional method.
IT 7722-84-1, uses and miscellaneous
(in aq. sorbent, for flue gas sampling for nitrogen oxide detn.)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

IC G01N031-00; G01N001-00
CC 59-2 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 79
ST nitrogen oxide detn gas sampling; flue gas nitrogen oxide; ozone
**nitric oxide oxidn app; hydrogen
peroxide flue gas analysis**

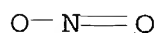
- IT 7722-84-1, uses and miscellaneous
(in aq. sorbent, for flue gas sampling for nitrogen oxide detn.)
- IT 10028-15-6, reactions
(nitric oxide oxidn. by, in
nitrogen oxide detn. in flue gas)

L55 ANSWER 22 OF 28 HCA COPYRIGHT 2003 ACS on STN

95:171992 Formation of **nitrogen dioxide** by laminar flames. Hargreaves, K. J. A.; Harvey, R.; Roper, F. G.; Smith, D. B. (London Res. Stn., Br. Gas Corp., London, SW6 2AD, UK). Symposium (International) on Combustion, [Proceedings], Volume Date 1980, 18th, 133-42 (English) 1981. CODEN: SYMCAQ. ISSN: 0082-0784.

AB The formation of **NO2** assocd. with laminar flames, principally premixed CH4 [74-82-8]-air, was studied. A variety of approaches to the problem was used. Preliminary expts. by noninterfering absorption spectroscopy showed some formation of **NO2** from small diffusion flames burning within an enclosed box. The main investigation used probe sampling and chemiluminescence anal. to yield more detailed information on the distribution of **NO2** around a fuel rich premixed CH4-air flame. The anomalous formation of **NO2** in the sampling line was examd. and confirmed previous observations that in order to minimize probe-formed **NO2** a low sampling pressure is essential. Under these conditions, **NO2** was found at the edge of the flame and in the post flame gases. Its absence in the hot regions of the flame was in agreement with other recent work. The area immediately surrounding the burner lip is a large source of oxidizing species. However, the oxidizing potential was not fully realized, possibly due to the limited residence time of NO in this region or back reactions destroying the **NO2**. Evidence of the likely mechanism assocd. with the NO to **NO2** conversion was obtained from measurements of **H2O2** thought to be involved in the oxidn. process. The **H2O2** was collected by probe sampling and condensation of flame products, followed by colorimetric anal. using TiCl4 reagent. Probe effects were again taken into consideration. Finally, a mechanism for the oxidn. of NO to **NO2** is discussed. Reactive species diffuse out of the flame and react with secondary air to produce **HO2** and possibly other oxidizing species. A simple computer model shows that the proposed sequence of reactions can lead to rapid oxidn. of NO.

- IT 10102-44-0P, preparation
(formation of, in laminar flames, mechanism of)
- RN 10102-44-0 HCA
- CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)



- IT 10102-43-9, reactions
(oxidn. of, in methane laminar flames)
- RN 10102-43-9 HCA
- CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- CC 50-1 (Propellants and Explosives)
 ST nitrogen oxide methane flame; **oxidn nitric oxide** flame
 IT Flame
 (laminar, of methane, mechanism of **nitrogen dioxide** formation in)
 IT 74-82-8, reactions
 (flames, **nitrogen dioxide** formation in laminar, mechanism of)
 IT 10102-44-0P, preparation
 (formation of, in laminar flames, mechanism of)
 IT 10102-43-9, reactions
 (**oxidn.** of, in methane laminar flames)

L55 ANSWER 23 OF 28 HCA COPYRIGHT 2003 ACS on STN
 91:78463 Oxidation of nitrogen monoxide in waste gas. Takahashi, Sadao; Azuhata, Shigeru; Taki, Tomoyuki; Akimoto, Hidetoshi; Hishinuma, Takao (Hitachi, Ltd., Japan; Babcock-Hitachi K. K.). Jpn. Kokai Tokkyo Koho JP 54037095 19790319 Showa, 2 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1977-102677 19770829.

- AB **H2O2** is added to waste gas at .gtoreq.400.degree. to oxidize NO to **NO2**. The method is used for treating waste gas from boilers, heating furnaces, gas turbines, and combustion. Thus, **H2O2** was added at **H2O2**-to-NO ratio 1.3 to waste gas contg. 100 ppm NO. The NO oxidn. was .gtoreq.95%. The oxidn. is independent of O in waste gas.

- IT 7722-84-1, reactions
 (**oxidn.** by, of **nitric oxide** in waste gas)
 RN 7722-84-1 HCA
 CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

- IT 10102-43-9, reactions
 (**oxidn.** of, in waste gases, **hydrogen peroxide** in)
 RN 10102-43-9 HCA
 CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- IC C01B021-36; B01D053-34
 CC 59-2 (Air Pollution and Industrial Hygiene)
 ST **nitric oxide oxidn hydrogen peroxide**; waste gas **nitric oxide**

- oxidn
- IT Waste gases
(nitric oxide in, oxidn. of,
hydrogen peroxide in)
- IT 7722-84-1, reactions
(oxidn. by, of nitric oxide in
waste gas)
- IT 10102-43-9, reactions
(oxidn. of, in waste gases, hydrogen
peroxide in)
- L55 ANSWER 24 OF 28 HCA COPYRIGHT 2003 ACS on STN
89:151861 Nitric oxide reduction in waste gases. Hayasaka, Hiroshi;
Sekiguchi, Yoshitoshi; Okigami, Noboru (Hitachi Shipbuilding and
Engineering Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 53033975
19780330 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1976-109206 19760909.
- AB A flue gas at 400-800.degree. is contacted with .gtoreq.1 alc. (EtOH
or MeOH), aldehyde (HCHO, MeCHO), or **H2O2** to convert NO to
NO2, (HNO)₂, or HNO₂ in the presence of O. Then the treated
gas is scrubbed with a urea soln. For example, a flue gas contg.
NO, H₂O, O, and N was treated with **H2O2** then scrubbed with
a urea [57-13-6] soln. The NO removal was .gtoreq.90%.
- IT 10102-43-9, uses and miscellaneous
(removal of, from flue gas, hydrogen peroxide
and urea in)
- RN 10102-43-9 HCA
- CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- IT 7722-84-1, uses and miscellaneous
(scrubbing soln. contg., in nitrogen oxide removal from flue gas)
- RN 7722-84-1 HCA
- CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

- IC B01D053-34
- CC 59-2 (Air Pollution and Industrial Hygiene)
- ST nitric oxide oxidn flue gas; urea flue
gas scrubbing
- IT Flue gases
(nitrogen oxide removal from, hydrogen peroxide
and urea scrubbing soln. for)
- IT 10102-43-9, uses and miscellaneous
(removal of, from flue gas, hydrogen peroxide
and urea in)
- IT 57-13-6, uses and miscellaneous 7722-84-1, uses and
miscellaneous

(scrubbing soln. contg., in nitrogen oxide removal from flue gas)

L55 ANSWER 25 OF 28 HCA COPYRIGHT 2003 ACS on STN
89:48326 Nitrogen oxide reduction. Izumi, Osamu; Murakami, Nobuaki;
Shirakawa, Seiichi (Mitsubishi Heavy Industries, Ltd., Japan). Jpn.
Kokai Tokkyo Koho JP 52138053 19771117 Showa, 7 pp. (Japanese).
CODEN: JKXXAF. APPLICATION: JP 1976-54295 19760514.
AB NO in flue gas is oxidized to NO₂ with H₂O₂,
then scrubbed with a urea soln. to form N and HNO₃. The HNO₃ soln.
is vaporized and reduced to N by N₂H₄.
IT 7722-84-1, reactions
(oxidn. by, of **nitric oxide** in flue
gases)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

IT 10102-43-9, uses and miscellaneous
(removal of, from flue gas, scrubbing soln. for)
RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

IC B01D053-34
CC 59-2 (Air Pollution and Industrial Hygiene)
ST nitric oxide removal flue gas; **hydrogen peroxide**
oxidn nitric oxide; urea denitrification
flue gas
IT Flue gases
(**nitric oxide** removal from, by oxidn
with **hydrogen peroxide**)
IT 7722-84-1, reactions
(oxidn. by, of **nitric oxide** in flue
gases)
IT 10102-43-9, uses and miscellaneous
(removal of, from flue gas, scrubbing soln. for)
IT 57-13-6, uses and miscellaneous
(scrubbing by, of **nitrogen dioxide** from flue
gases)

L55 ANSWER 26 OF 28 HCA COPYRIGHT 2003 ACS on STN
87:205903 Control of nitrogen oxides in waste gases. Izumi, Jun;
Murakami, Nobuaki (Mitsubishi Heavy Industries, Ltd., Japan). Ger.
Offen. DE 2703882 19770804, 12 pp. (German). CODEN: GWXXBX.
APPLICATION: DE 1977-2703882 19770131.
AB NO_x in waste gases contg. 1-10% O is controlled by mixing MeOH
[67-56-1], HCHO [50-00-0], or similar O-contg. hydrocarbons, or
their precursors followed by oxidn. at .ltoreq.1500.degree. to

convert NO to **NO2**, and scrubbing with aq. Na2SO3 (pH .gtoreq.5) to remove **NO2**. The oxidn. of NO to **NO2** affected by **H2O2** and activated O, formed as intermediate products in the oxidn. zone.

- IC B01D053-34
- CC 59-2 (Air Pollution and Industrial Hygiene)
- IT 50-00-0, uses and miscellaneous
(in **nitric oxide oxidn.**, in waste gases)
- IT 67-56-1, uses and miscellaneous
(in **nitric oxide oxidn.**, in waste gases)

L55 ANSWER 27 OF 28 HCA COPYRIGHT 2003 ACS on STN

87:43539 Nitric oxide removal from combustion waste gas. Murakami, Nobuaki; Izumi, Jun; Shirakawa, Seiichi (Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 52038460 19770325 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1975-113752 19750922.

AB A NO-contg. combustion gas is mixed with **H2O2** soln. to oxidize NO to **NO2** at .gtoreq.150.degree., optionally a residual NO is oxidized with O3, and the **NO2** is scrubbed. Thus, a waste gas contg. NO 123 ppm was bubbled through 17% **H2O2** soln. at 50.degree., then passed through a reactor at .apprx.450.degree., and the gas was scrubbed. The treated gas contained .ltoreq.2 ppm **NO2**.

- IT 7722-84-1, reactions
(oxidn. by, of nitrogen oxide from combustion gases)
- RN 7722-84-1 HCA
- CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO-OH

IT 10102-43-9, uses and miscellaneous
(removal of, from combustion gases by oxidn. with **hydrogen peroxide**)

- RN 10102-43-9 HCA
- CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

- IC B01D053-34
- CC 59-2 (Air Pollution and Industrial Hygiene)
- ST **nitric oxide oxidn hydrogen peroxide**
- IT Combustion gases
(nitrogen oxide removal from, by oxidn. with **hydrogen peroxide**)
- IT 7722-84-1, reactions
(oxidn. by, of nitrogen oxide from combustion gases)

IT 10102-43-9, uses and miscellaneous
(removal of, from combustion gases by oxidn. with
hydrogen peroxide)

L55 ANSWER 28 OF 28 HCA COPYRIGHT 2003 ACS on STN

84:21675 Removal of NOx and SO2 from waste gas. Aksukawa, Masumi;
Atsukawa, Masumi; Takahashi, Naoyuki; Seto, Toru (Mitsubishi Heavy
Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 50070268
19750611 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP
1973-120579 19731026.

AB A system is developed which removes NOx and SOx simultaneously and
produces H2SO4 [7664-93-9] and gypsum [13397-24-5] without forming
any waste water. SO2 [7446-09-5] is scrubbed with soln. contg. NaOH
and Na2SO3; NO [10102-43-9] is oxidized by
H2O2 and HNO3; and the NO2 [10102-44-0]
formed by the oxidn. was removed by Na2SO3, producing Na2SO4. The
Na2SO4 is converted to H2SO4 by electrodialysis. The Na2SO3
produced by the desulfurization is treated with Ca(OH)2 to form
CaSO3 which is oxidized to CaSO4. For the treatment of a gas contg.
NO 145, SO2 800 ppm, O 3%, N, CO2, and H2O balance, 15 wt.% Na2SO3
was used for desulfurization, and 5 wt.% H2O2 aq. soln.
with 5 wt.% NaOH for the NO oxidn. The absorbent used for
desulfurization was recycled for the removal of NO2. The
concn. of NO and SO2 in the treated gas was 15 and 10 ppm, resp.
Approx. 85% of the Na2SO4 was converted to HSO4.

IT 10102-43-9, uses and miscellaneous 10102-44-0,
uses and miscellaneous
(removal of sulfur dioxide and, from waste gas with gypsum and
sulfuric acid manuf.)

RN 10102-43-9 HCA

CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

$\text{N}=\text{O}$

RN 10102-44-0 HCA

CN Nitrogen oxide (NO2) (8CI, 9CI) (CA INDEX NAME)

$\text{O}-\text{N}=\text{O}$

IC B01D; C01B; C01F

CC 59-2 (Air Pollution and Industrial Hygiene)

IT 10102-43-9, uses and miscellaneous 10102-44-0,
uses and miscellaneous

(removal of sulfur dioxide and, from waste gas with gypsum and
sulfuric acid manuf.)

=> d l56 1-9 ti

L56 ANSWER 1 OF 9 HCA COPYRIGHT 2003 ACS on STN

- TI Method for fabricating semiconductor device to prevent contact plug damage due to misalignment
- L56 ANSWER 2 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Comparison of methods for reducing nitrogen oxides and hydrogen fluoride emissions during mixed acids pickling
- L56 ANSWER 3 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Process and apparatus for removing nitrogen and sulfur oxides from combustion gases
- L56 ANSWER 4 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Method for separation of nitrogen oxides from waste gases
- L56 ANSWER 5 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI An investigation of the adsorption of oxides of nitrogen on respirable mineral dusts and the effects on their cytotoxicity
- L56 ANSWER 6 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Flowing afterglow studies of gas phase magnesium ion chemistry
- L56 ANSWER 7 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Magnesium ion chemistry in the stratosphere
- L56 ANSWER 8 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Bond energy terms in oxides and oxo-anions
- L56 ANSWER 9 OF 9 HCA COPYRIGHT 2003 ACS on STN
- TI Catalytic reduction of nitrogen oxides with ammonia

=> d l56 3,4 cbib abs hitstr hitind

- L56 ANSWER 3 OF 9 HCA COPYRIGHT 2003 ACS on STN
- 121:237621 Process and apparatus for removing nitrogen and sulfur oxides from combustion gases. Jones, Dale G. (Noell, Inc., USA). Can. CA 1330252 A1 19940621, 69 pp. (English). CODEN: CAXXA4. APPLICATION: CA 1986-522496 19861107.
- AB The app. comprises an NO conversion section and an absorption section, where the section for converting NO to **NO2** has a flow path for gas and a gas contacting section; means for introducing a gas contg. NO and **NO2** at a first NO/**NO2** molar ratio into the contacting section; and means with preheater for mixing together a peroxy initiator and an O-contg. gas and for injecting the mixt. into the contacting section. The preheater preheats the injection fluid, which comprises propane and oxygen in the range of 5% to 20% by vol., based on the total vol. of the injection fluid, to a temp. in the range of ambient temp. to 800.degree.F.
- IT 1344-28-1, Alumina, processes 7722-84-1, Hydrogen peroxide, processes (process and app. for removing nitrogen and sulfur oxides from

combustion gases)

RN 1344-28-1 HCA
 CN Aluminum oxide (Al₂O₃) (8CI, 9CI) (CA INDEX NAME)
 *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
 RN 7722-84-1 HCA
 CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO—OH

IT 10102-43-9, Nitrogen oxide (NO), processes
 10102-44-0, **Nitrogen dioxide**, processes
 (process and app. for removing nitrogen and sulfur oxides from
 combustion gases)
 RN 10102-43-9 HCA
 CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
 CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

O—N=O

IC ICM B01J019-24
 ICS B01D053-34; C01B021-22
 CC 59-4 (Air Pollution and Industrial Hygiene)
 IT 67-56-1, Methanol, processes 74-82-8, Methane, processes
 74-84-0, Ethane, processes 74-98-6, Propane, processes 497-19-8,
 Sodium carbonate, processes 1310-73-2, Sodium hydroxide, processes
 1333-74-0, Hydrogen, processes **1344-28-1, Alumina**
 , processes **7722-84-1, Hydrogen peroxide**
 , processes 15243-87-5, Trona 15752-47-3, Nahcolite
 (process and app. for removing nitrogen and sulfur oxides from
 combustion gases)
 IT 7446-09-5, Sulfur dioxide, processes **10102-43-9, Nitrogen**
oxide (NO), processes **10102-44-0, Nitrogen**
dioxide, processes 11104-93-1, Nitrogen oxides, processes
 12624-32-7, Sulfur oxide
 (process and app. for removing nitrogen and sulfur oxides from
 combustion gases)

L56 ANSWER 4 OF 9 HCA COPYRIGHT 2003 ACS on STN
 111:139749 Method for separation of nitrogen oxides from waste gases.
 Mangold, Klaus; Taetzner, Carl W. (Fed. Rep. Ger.). Ger. Offen. DE
 3731899 A1 19890427, 6 pp. (German). CODEN: GWXXBX. APPLICATION:
 DE 1987-3731899 19870923.
 AB NO_x is removed from waste gases, flue gases, or exhaust gases by
 treatment of the gas with an oxidizing agent (O₂, O₅, H₂O₂
) to oxidize NO to NO₂ at 20-200.degree. and then

contacting the oxidized gas with MnO₂ to form Mn(NO₃)₂. The MnO₂ is in a reactive form such as granulated pyrolusite which can also contain catalytic **Fe oxides** such as **Fe₂O₃**. The MnO₂ can be thermally regenerated for recycling.

IT 7722-84-1P, **Hydrogen peroxide**,
preparation
(nitrogen oxide oxidn. with, in removal of nitrogen oxides from
waste gases with manganese dioxide)
RN 7722-84-1 HCA
CN Hydrogen peroxide (H₂O₂) (9CI) (CA INDEX NAME)

HO-OH

IT 10102-43-9, Nitrogen oxide (NO), uses and miscellaneous
10102-44-0, **Nitrogen dioxide** (
NO₂), uses and miscellaneous
(removal of, from waste gases, with manganese dioxide)
RN 10102-43-9 HCA
CN Nitrogen oxide (NO) (8CI, 9CI) (CA INDEX NAME)

N=O

RN 10102-44-0 HCA
CN Nitrogen oxide (NO₂) (8CI, 9CI) (CA INDEX NAME)

O-N=O

IC ICM B01D053-34
ICS C01G045-08; C01G045-02; F23J015-00
ICA A62D003-00
CC 59-4 (Air Pollution and Industrial Hygiene)
ST nitrogen oxide removal waste gas; manganese dioxide nitrogen oxide
removal; pyrolusite **nitrogen dioxide** removal gas
IT 7722-84-1P, **Hydrogen peroxide**,
preparation 7782-44-7P, Oxygen, preparation 10028-15-6P, Ozone,
preparation
(nitrogen oxide oxidn. with, in removal of nitrogen oxides from
waste gases with manganese dioxide)
IT 10102-43-9, Nitrogen oxide (NO), uses and miscellaneous
10102-44-0, **Nitrogen dioxide** (
NO₂), uses and miscellaneous 11104-93-1, Nitrogen oxide,
uses and miscellaneous
(removal of, from waste gases, with manganese dioxide)